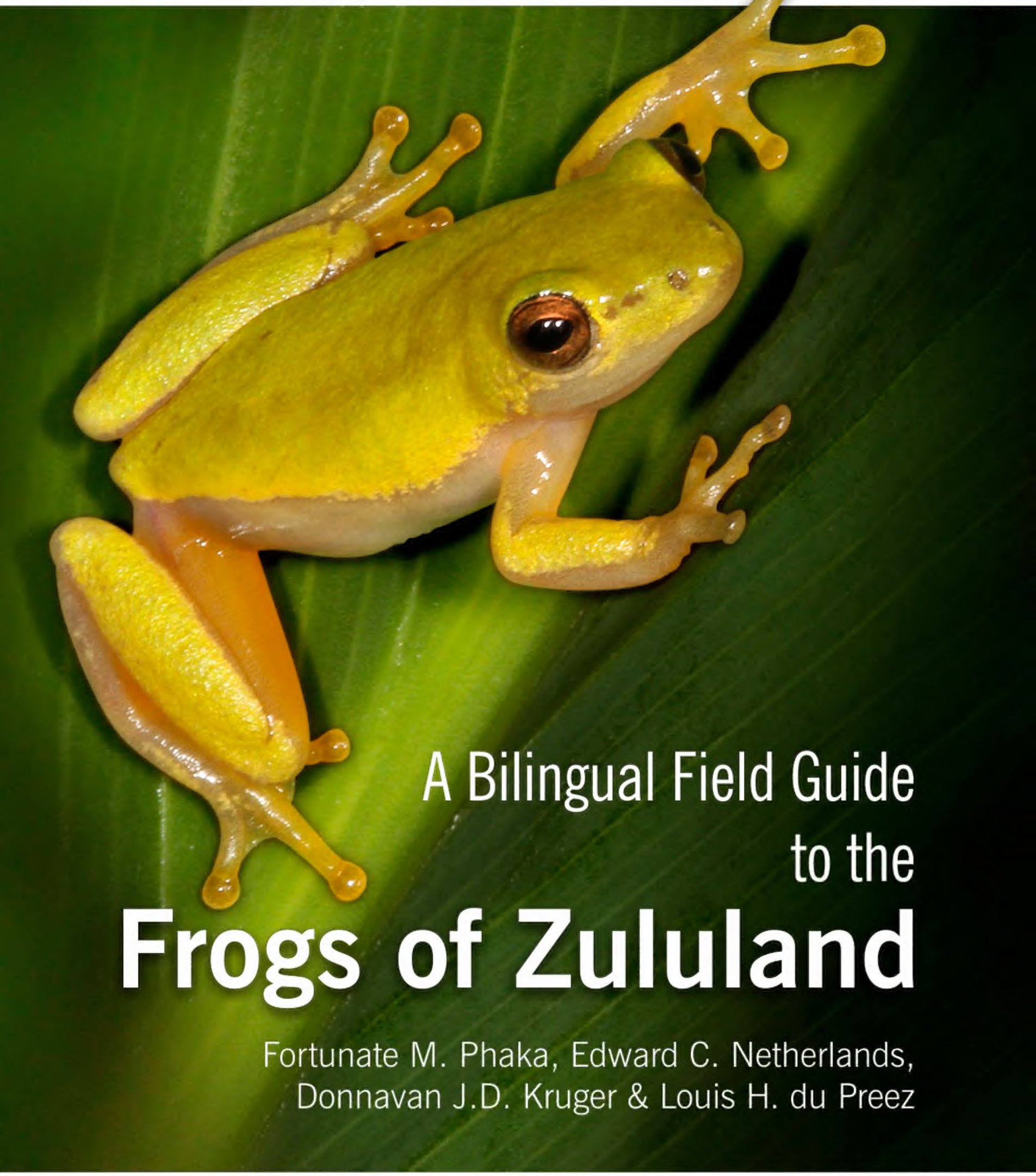

A Bilingual Field Guide to the Frogs of Zululand

Fortunate M. Phaka, Edward C. Netherlands,
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SURICATA 3

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A Bilingual Field Guide to the Frogs of Zululand

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SURICATA

Suricata is the genus name of the suricate (*meerkat*), which is near-endemic to the arid western parts of southern Africa (occurring in Namibia, South Africa, Botswana; and just entering into a very small area in the extreme south of Angola). Behaviourally, suricates are socially inclusive and innately inquisitive, symbolising the commitment of the South African National Biodiversity Institute (SANBI) to include all biodiversity and serve all of Africa, and the scientific curiosity that precedes and drives research and publication of research results. Sister journal to SANBI's *Strelitzia*, *Suricata* is a peer-reviewed journal and publishes original research such as monographs, revisions, checklists, Red Lists, Atlases, and Faunas of any taxa belonging to Regnum Animalia (the Animal Kingdom).

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PREFACE

Frogs are in general poorly known and highly misunderstood; yet they are among the most important members of the animal kingdom. These harmless creatures are as colourful and melodious as birds and they have outlived dinosaurs, but are currently under threat of extinction. Their presence or absence can tell us a lot about an environment and their presence is vital to the functioning of many ecosystems. Frogs are an unusual group of animals as they live in two different environments; water and land. Being unusual is what makes them important and it unfortunately also contributes to them being misunderstood.

This book is an introduction to the frogs found in Zululand, the northern region of South Africa's KwaZulu-Natal Province. It is aimed at increasing knowledge of frogs within Zululand using two languages commonly spoken in the region. Writing this book would not have been possible without an understanding of how people perceive frogs and knowing which frogs occur in the region. The people of Zululand were always welcoming and more than willing to share their frog stories with us and also assisted with research wherever possible. For that, we are eternally grateful.

Publishing and distribution of this book would not have been possible without the organisations that believed in our vision of conservation becoming relatable to everyone. The authors would like to express gratitude to the following organisations for their support:
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The colour-coded habitat keys were used and modified with kind permission from the Endangered Wildlife Trust (EWT).

Some of the isiZulu names used were taken, and in some cases adapted, from the book: *My first book of southern African frogs* (Jeanne Tarrant). Other names were formulated with the help of Bongani Mkhize.

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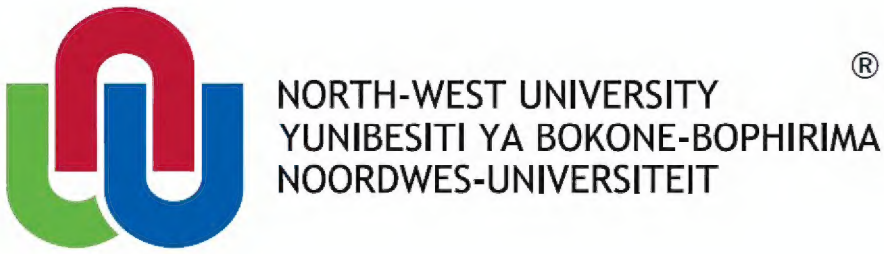


INTRODUCTION TO AMPHIBIANS

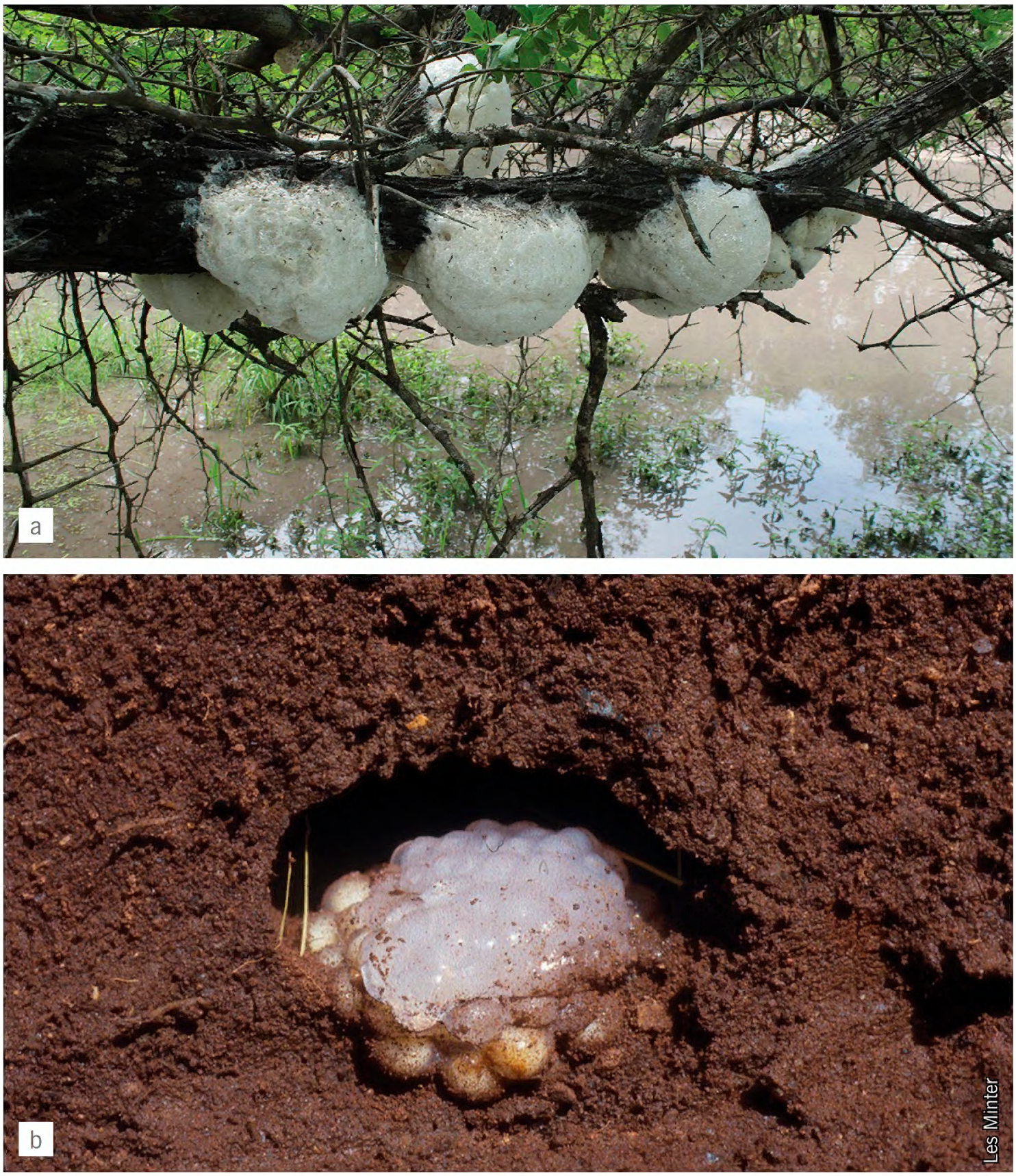
Amphibians are animals that have two distinct phases in their life cycle, namely the tadpole phase, which is spent mostly in water until they undergo metamorphosis and change into the adult phase, which is spent mostly on land. There are a few amphibian species that spend their adult phase in water but are still able to survive on land. On the other hand, there are a few groups that never enter water and complete their life cycle on land. All amphibians lay eggs without shells and their eggs are fertilised externally. Amphibians are divided into three groups: lizard-like amphibians with four equal length limbs and a long tail called salamanders; legless burrowing wormlike amphibians called caecilians; and tail-less amphibians with strong hind legs called frogs. Of these three amphibian groups, only frogs are found in southern Africa. Toads are also included when we refer to frogs as they are the same type of amphibian. People often wrongfully separate toads from other frogs based on size and appearance, but they are true frogs.

Frog development can be divided into three phases: the egg, the tadpole (the juvenile or larval stage), and the adult frog. Most species of frogs lay their eggs in or near water. These eggs are fertilised immediately after being laid. Generally, the fertilised eggs take a few days to develop and hatch into tadpoles that mostly live in water. Tadpoles live and feed in the water for a few weeks or months as they slowly develop features of adult frogs. When this time of development has passed, the tadpoles undergo metamorphosis where they change and start looking like adult frogs. During this phase their tails are slowly absorbed. The adult frogs then generally move onto land where there is high humidity, and return to water to breed and restart the whole life cycle again.

Life cycle / life stages of the Red Toad.

Some frogs do not lay their eggs in water. Their eggs are laid in moist places such as underground or on vegetation, and tadpoles complete their growth inside the egg and emerge as young frogs that resemble adults. These types of frogs are sometimes found far from sources of water.

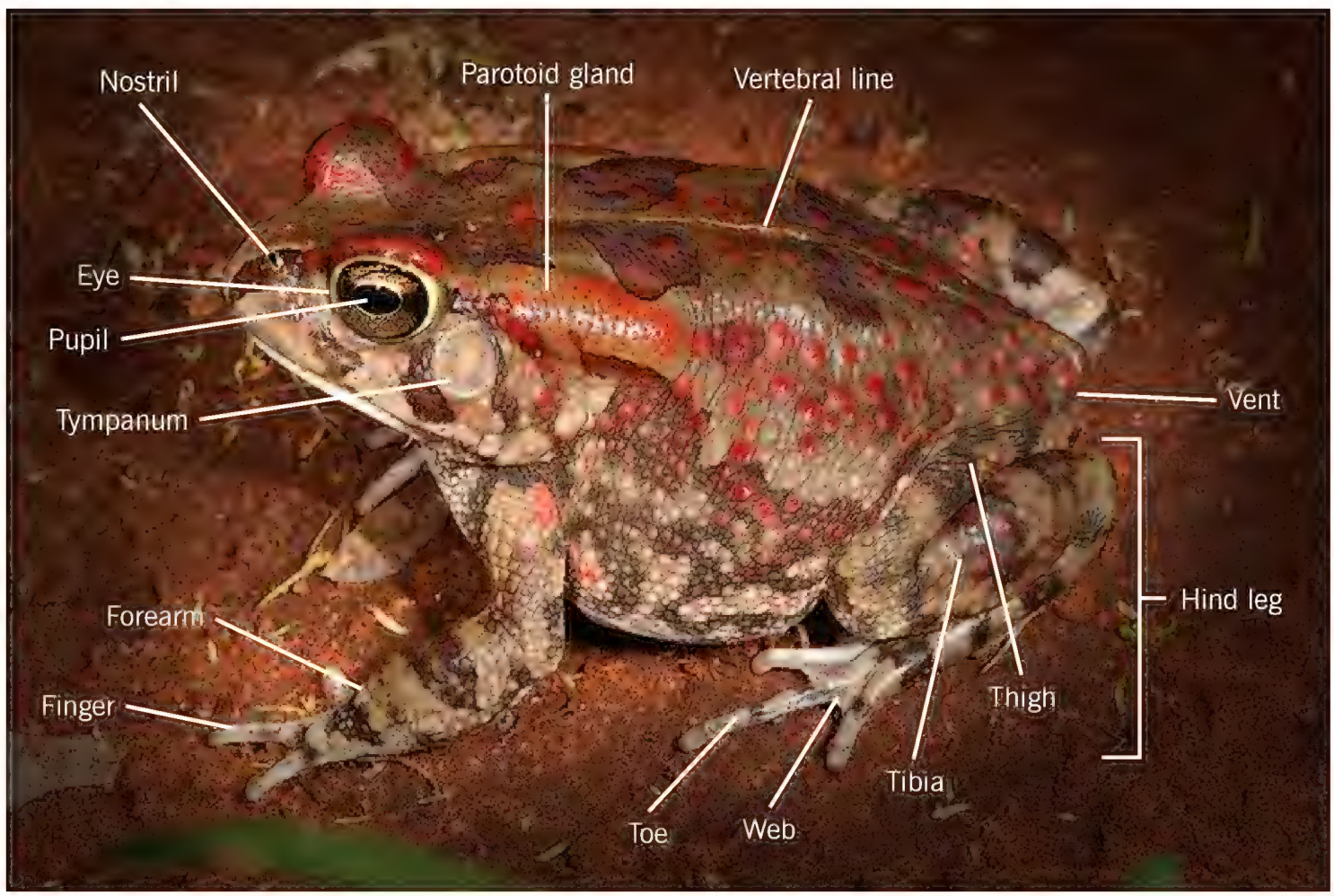
Most people know the general appearance of frogs, and from a distance, they may all look the same, but when taking a closer look numerous differences between the species become apparent. Size is one of the most visible differences between some species, for example, one of the largest frogs in the Zululand region is the African Bullfrog (*Pyxicephalus edulis*), which is slightly larger than a person's palm, while one of the smallest is the Dwarf Puddle Frog (*Phrynobatrachus mababiensis*), which is slightly larger than a person's thumbnail.



Some frogs nest away from water: a, nest of Southern Foam Nest Frog; b, egg mass of Bushveld Rain Frog.

Different sizes: a, African Bullfrog; b, Dwarf Puddle Frog.

Frogs possess a variety of different skin colours and patterns. These help some frogs camouflage themselves to avoid predators and hide in ambush for prey. Some frogs have colours and patterns so distinctive that they can be easily identified using these features only. In other species, the colours and patterns of individuals vary so much that they cannot be relied on as features used for identification. For this reason, the colours and patterns of some frogs illustrated in this field guide may differ from those encountered by the reader. In addition to the features mentioned above, frogs can also be identified and differentiated by using a combination of other features, such as the shape of the pupil and webbing on the limbs.



Frog identification guide.

KWAZULU-NATAL

Southern Africa contains a rich diversity of fauna and flora; this is mainly attributed to the region's diverse landscape, suitable climate and unique habitat types. Ultimately these factors contribute to the uneven distribution of frog species throughout southern Africa. Suitable breeding conditions are vitally important to frogs, and thus rainfall patterns and the numbers and diversity of frog species seem to parallel one another, increasing from the west (Namibia) to east (Mozambique).

Another possible factor playing a role in the dispersal and diversity of frog species in southern Africa may be the evolutionary origin and adaptation of frog species over time. Previous studies have shown that based on the climatic warming in the past, tropical frog species from northern Africa moved down to southern Africa, whereas species originally from the southern parts moved slightly northeastwards. Later the climate cooled down and this process was reversed. Some populations became isolated and evolved independently, whereas most of the tropical species established themselves on the more tropical northeastern side of southern Africa. These events led to the possible increase in species diversity northwards, stretching along the coast from the southwestern Cape to KwaZulu-Natal and an increase in endemic species southwards. In other words, KwaZulu-Natal contains high species richness and low numbers of endemics, compared to the southwestern Cape, which is conspicuously rich in endemics, but low in species diversity. However, the distribution of frog species in the central and northwestern parts of South Africa appears to have low diversity and few endemic species, this could be due to the unsuitable habitat types like the high and cold mountain ranges, open grasslands and the barren desert areas.

KwaZulu-Natal is the third smallest of South Africa's nine provinces; however, this province contains the second largest human population as compared to the other provinces. KwaZulu-Natal is one of the most biodiverse provinces in South Africa and is part of the internationally recognised Maputaland–Pondoland–Albany biodiversity hotspot. This hotspot covers a region stretching from

Eastern Cape, through KwaZulu-Natal, eastern Swaziland, into Mpumalanga and Mozambique. It was declared a hotspot as it contains high biodiversity in comparison to other parts of southern Africa. KwaZulu-Natal falls within a summer (mid-October to mid-February) rainfall area, and has a subtropical humid climate. The subtropical conditions and moist savanna of KwaZulu-Natal seem to be the preferred habitat for a vast diversity of frog species. This could be due to the relatively high rainfall and the variety of wetlands that occur on the escarpment and across the coastal plain into the sea. As a result of the steep escarpment (towards the sea) numerous deeply incised river valleys helped form a complex landscape with diverse habitats. With such diversity of habitats, it is possible that greater numbers of amphibian species took refuge in these areas.

As mentioned above, KwaZulu-Natal is an important refuge for a number of frogs, which include some endangered and endemic species. Due to the drastic increase in anthropogenic influences on the natural environment by land-cover change as a result of agriculture, mining and human settlement, the stress on the survival of frogs increases and protected havens become more important for the survival of these species in KwaZulu-Natal. The province's subtropical climate presents a risk of malaria and this disease is endemic to the northern part of the province with areas in and around Ndumo Game Reserve being particularly high-risk areas. Land-cover change can potentially increase the threat of malaria in the province. Thus, frogs, which are one of the natural predators of mosquitos (the vector of malaria), can help as a biological control for the disease.

The tourism sector in KwaZulu-Natal is important to South Africa's economy as the province is a popular destination for both international and local tourists. Top tourist attractions include wildlife reserves, beaches and live events. Ecotourism is steadily growing in KwaZulu-Natal with the Zululand region being one of the more popular ecotourism destinations. The main ecotourism attractions in the province include birding safaris, camping and cultural tours. Birding safaris are particularly popular in Zululand as the region boasts a high diversity of bird species. Due to the attractive and impressive frog diversity in this region, frogging safaris have the potential to be another popular ecotourism attraction for Zululand.

THE FROGS OF ZULULAND

KwaZulu-Natal has the highest diversity of frogs within southern Africa. The province is home to over 70 of the more than 170 frog species found in southern Africa. Zululand, which covers the northern section of KwaZulu-Natal, is home to 58 different frog species, which, along with information on their biology and how to identify them, is the focus of this guide.

Frogs are amphibious creatures mainly dependent on water and will most likely be seen or heard in close proximity to waterbodies such as rivers, streams, dams, ponds, and small temporary rain-filled pools or puddles. Most frogs are nocturnal and active during the warm and wet months of the year. During the breeding season, most species congregate in large breeding colonies around waterbodies, and advertisement calls form into large choruses that can be heard from quite a distance away. Rain presents suitable conditions for frogs to migrate between waterbodies. Some species such as Grass Frogs (*Ptychadena* spp.) will start making their move even before it rains as temperatures become cooler and humidity rises. For this reason, Grass Frogs are occasionally seen moments before rain starts falling. Clawed Frogs, also referred to as Platannas (*Xenopus* spp.), are normally confined to water, but will occasionally be found migrating over land during or immediately after heavy rains. In the more populated regions of Zululand, migrating frogs will often cross roads or travel through people's yards on their way to new waterbodies. Sadly, not all frogs reach their destination as fences or walls block many frogs, and large numbers end up as roadkill.

Frogs that don't become roadkill victims are likely to end up being killed when people encounter them. In our conversations with Zululand locals, they mentioned various inhibitions towards frogs as reasons why they are quick to dispose of them. The reasons why people are uneasy around frogs differ across the region, but they are mostly related to the frog's appearance and how they live. A lot of the seemingly unsettling features of frogs are discussed in the sections to follow. However, not everything will be covered in this book as people's views differ and also change with time. This presents the reader with an opportunity to find out more about people's relationship with frogs and a chance to research aspects of this relationship that may not be covered in this book.

Form and Function

The skin of a frog is a remarkable organ that does more than just provide body covering. It is used for respiration, maintaining body temperature and osmoregulation. The skin also protects frogs by fighting pathogens, camouflaging the animal and producing secretions that deter predators. These secretions come from granular glands that sometimes resemble typical warts. Many people believe that this resemblance means that frogs can give them warts, however, this is not true; warts on people are related to viral infections whereas the warty structures on frogs are tools for survival.

In respiration, the frog's skin is mainly used to release carbon dioxide while the lungs are mainly used to absorb oxygen from the air that is inhaled through the nostrils. For the skin to be effectively used for respiration it needs to be moist. Frogs depend on water to keep their skin moist and also have mucus glands to keep the skin slimy and moist. In addition to this, frog skin also has secretions that help keep the body cool when ambient temperatures become too high. The frogs of Zululand, and southern Africa at large, are mostly active at surrounding temperatures ranging between 20 and 30°C. Frogs are cold-blooded organisms also known as ectotherms and their

body temperature is determined or regulated by the ambient temperature of their habitat. People regulate their own body temperature and maintain it at around 36.5–37.5°C regardless of the temperature of their surroundings. This difference in body temperature between people and frogs results in frogs feeling cold when people handle them. For some people the cold slimy skin of frogs is off-putting, but it is really quite harmless provided it isn't ingested.

Frogs inhale and exhale air through their nostrils and also transport air to and from their lungs by rapidly lowering and raising the mouth floor. This is visible as a pulsating action on the underside of the mouth where the vocal sac is located. This pulsating action is similar to how our stomach and chest area moves up and down as the diaphragm contracts and relaxes when we breathe.

The inhaled air can also be used for vocalisations. Instead of being expelled, frogs can force the air over their vocal cords and into the vocal sac to produce a sound. This causes their vocal sacs to expand like balloons during calling and relax again thereafter. Adult male frogs are usually the ones heard calling; either producing advertisement calls to attract a female, or aggression calls to let rival males know that a particular calling spot is taken and to keep their distance. However, adult male frogs are not the only musicians. Females of some species are also able to produce release calls, which are used to indicate that they are not ready to mate or have already mated with another male. Juvenile frogs are in some cases able to produce a high-pitched call when handled. This call is used to catch unsuspected predators, or people, off-guard and aid in possible escape.

Frog calls are unique for each species and females use them to identify males of the same species when there are several species calling. Females of certain species with extended breeding seasons will approach a breeding site and select the best male on the basis of the frequency (pitch) or call rate at which the male is calling, or choice of call site. Frog calls are also an effective diagnostic tool to distinguish between species in the field and are one of the most reliable methods to identify species since this is the way the frogs identify themselves.

Different vocal sac types.

The eyes of frogs differ in size and shape of the iris across species. Frogs that hunt at night, such as the Natal Tree Frog (*Leptopelis natalensis*), generally have larger eyes in relation to body size when compared to frogs that may be found active during the day like the Red Toad (*Schismaderma carens*). Larger eyes let in more light and help frogs see better when its dark. Burrowing frogs, such as the Mottled Shovel-nosed Frog (*Hemisus marmoratus*) tend to have smaller eyes, which are less likely to be damaged underground. Some frog species have a vertical pupil while others have a horizontal or circular pupil. The shape of the pupil is another helpful feature for identifying species.

Probably the most common feature defining a frog is its ability to jump, as frogs are generally known as the jumpers of the animal kingdom. The Sharp-nosed Grass Frog (*Ptychadena oxyrhynchus*), also found in Zululand, holds the record for the long jump among all frogs in the world relative to its size and weight. However, not all frogs are good jumpers and they use different methods for moving around. Some frogs move around by swimming, walking, or even running. Other more specialised species are good at climbing or burrowing. Their limbs generally give an indication of which method of locomotion they are good at. Shorter, thinner hind legs like those of the Banded Rubber Frog (*Phrynomantis bifasciatus*) indicate that a frog is good at walking and running. Both the forearms and hind legs of Rain Frogs (*Breviceps* spp.) are short, which indicates that they are good at burrowing. Platannas (*Xenopus* spp.) have strong hind legs with extensive webbing and heavy muscles, and this is a sign that they are good swimmers. Grass Frogs (*Ptychadena* spp.) are good jumpers thanks to their long and powerful hind legs. Frogs that are good climbers such as the Tree Frogs (*Leptopelis* spp.) have swellings known as terminal discs or bulbs at the tips of their fingers and toes. These terminal bulbs aid in climbing and holding on to vertical surfaces.

Frogs and our Ecosystem

Frogs are important indicators of environmental health and also contribute to the functioning of ecosystems as they serve as both prey and predator species. Their permeable skin absorbs water along with harmful substances dissolved in the water. Since frogs live both on land and in water they are affected by changes in both environments. Extreme temperatures can adversely affect how their bodies work. Frogs disappearing from a habitat can generally be taken as a sign of problems with that habitat. Tadpoles of many species feed at the bottom of waterbodies and may end up ingesting harmful substances, removing them from that environment.

Frogs are important small predators and insectivores as they help regulate insect populations in ecosystems. They are usually present in high numbers and this means they eat a lot of insects, and tadpoles also prey on a lot of the insect larvae that are found in water. Frogs and tadpoles are in turn eaten by many predators that are larger than them. These include fish, birds and snakes. However, these larger predators do not exclusively feed on frogs as they are mostly opportunistic hunters who will eat whatever they can catch. For example, some snake species will hunt birds and small mammals such as rats and squirrels, but they will also prey on frogs whenever they get a chance to do so.

Frogs and People

Frogs are important to people in a number of different ways. From an early age frogs feature in folk tales from our grandparents, fairy tales we read in books and on television as cartoons. As we grow older they may form part of school lessons, especially in biology or life sciences classes.

Frogs serve as tools for monitoring ecosystem health and help regulate populations of insects that cause problems for people. They are also a source of food for people. Frogs are eaten by people in many parts of the world. In southern Africa, Bullfrogs (*Pyxicephalus* spp.) are eaten in parts of Mozambique, Limpopo Province and KwaZulu-Natal. Eating frogs is, however, more of a delicacy than a staple food. While some frogs are food for people, other frogs help people hunt for food. Some tribes in South America coat their arrowheads with venom from Poison Dart Frogs (*Phyllobates* spp.). The venom from the frog paralyses animals that are shot with an arrow coated with the venom, making it easier for the hunting tribe to catch their food.

Since frogs eat a lot of insects they keep numbers of pests low. These insects include mosquitos, termites and tsetse flies. For Zululand this helps keep cases of malaria low, as malaria is endemic to the region. Regulating termite populations reduces the potential damage they could cause to people's property. Frogs also eat tsetse flies and keep their populations low. This helps prevent cases of human sleeping sickness and nagana in cattle. Human sleeping sickness and nagana are a problem in rural areas and nagana often results in loss of livestock.

Southern Africa has no frogs that pose a risk to people, but several species discharge toxic or poisonous skin secretions. Rubber Frogs (*Phrynomantis* spp.) can cause irritation if a person with sensitive skin touches them. The other frog species in southern African are harmless to people. Frogs often secrete toxins to protect themselves from predators and those toxins may cause dogs to foam at the mouth when they try to bite them. Most frogs are not only harmless to people, but their toxins also have the potential to be medically developed into painkillers, muscle relaxants and heart stimulants.

Scientists have discovered that skin secretions of some frogs in South America are 200 times more powerful than the best pain relief medicine currently on the market. A team of researchers at a university in Abu Dhabi discovered 100 new antibiotics using frog skin. Some of the Nobel Prize winners in physiology and medicine were awarded for research on frogs. There are also possibilities of developing frog skin secretions into treatments for heart attack and stroke victims, among other conditions. Research into the medicinal use of these secretions is still in the early stages, but is promising nonetheless.

How to use this Book

This book individually illustrates frogs found in Zululand. The book is written in isiZulu and English as these are the more widely used languages in the region. Flip the book to switch to your desired language. The structure of the species description pages in this illustrative guide of the frogs of Zululand follows the process from first seeing a frog to finally reaching a positive identification. Generally, when you encounter a frog you first notice its **size**, **colour** and the structure of the **body**. However, be cautious when considering colour, as several species exhibit variations in colour from one individual to the next. The colour of the specimen you are observing may vary from that of the illustration in this book. Upon close inspection, you start to notice the finer details of its morphology, which include the shape of the head, features of the **forearms** and **hind legs**, visibility of the tympanum, and feel of the skin on the back and the underside. As you improve in your ability to describe morphological features of frogs you also become better at determining **sexual dimorphism** or telling the difference between sexes within a species. You also learn how to differentiate species using **key ID points**.

Features of the species pages

1. The **common names** in both **English** and **isiZulu**, as well as the ***scientific name*** are provided.
2. The distribution maps show where each frog occurs in Zululand.
3. A colour-coded key for the habitats where each frog can be found.
4. The 'key ID points' section gives an indication of what to look out for when differentiating a species from others.
5. The ruler on the side of the page indicates the maximum length of the frog, but keep in mind that juvenile frogs will be smaller and not all adult frogs will reach that length. By placing your hand next to the bar you can compare the size of the frog with the size of your hand.
6. Text describing the different frog species is written in telegram style and not full sentences as the book provides only key information on identification, distribution and habitat. For further reading and in-depth information about the illustrated frog species a list of resources is provided in the 'Further Reading' section (page 76). The books suggested in this section also provide information on the frogs of southern Africa as a whole. A glossary (pages 74–75) is included to help with some of the terms used when describing frog species. A list of references used when compiling this book is included at the end.

Habitat key and definitions

Bushveld: a habitat characterised by grassy plains that have clusters of trees and tall shrubs. Forms part of the Savanna biome.

Coastal Woodland: a low-density forest on the coast that may have a ground layer of grasses, herbs and shrubs.

Dams: man-made barriers that block the flow of a watercourse and form reservoirs for water storage.

Farmland: land used for farming or agriculture.

Forest: a habitat that is mostly covered by large trees and a ground layer of dense shrubs and other plants.

Fossorial: refers to frogs that burrow and spend most of their lives underground.

Gardens: pieces of land cultivated for ornamental purposes.

Grassland: a habitat dominated by grasses and herbs with few or no trees.

Leaf litter: decomposing leaves that form a layer on top of soil.

Mangrove: a swampy habitat in tropical deltas or lagoons.

English common name

1

Scientific name | Zulu common name

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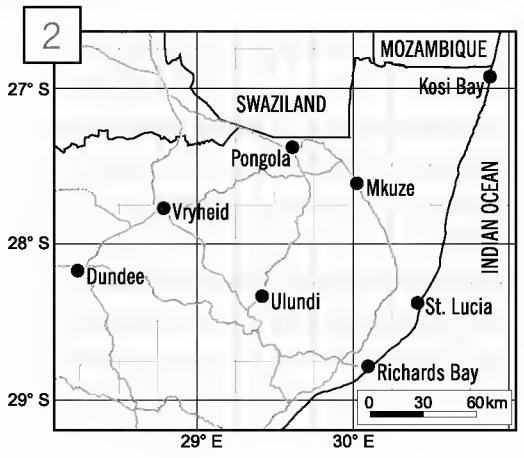

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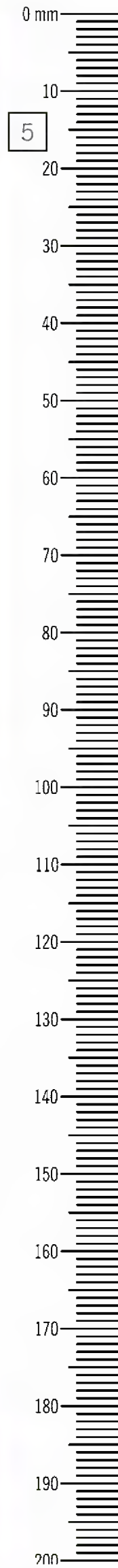
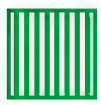
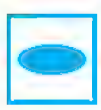




Marshes: low-lying areas that are flooded during wet seasons and the soil remains waterlogged or full of water for most of the year.

Open water: waterbodies with little to no vegetation growing in the water.



Ponds: small, usually ornamental, permanent bodies of standing water.

Rocky streams: small and narrow parts of a river with a lot of rocks inside the water and on the banks.

Sand Forest: a unique type of subtropical forest habitat found on inland sand dunes.

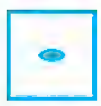
Savanna: a habitat characterised by a ground layer of grass and an upper layer of woody plants and trees of medium height.

Shallow water: a waterbody or part of a waterbody that is not very deep.

Soil: the upper layer of the earth in which plants grow.

Streams: small and narrow parts of a river.

Swamps: Low-lying areas where water collects and the soil is waterlogged for most of the year.



Temporary pools: small, sometimes man-made depressions that fill up with water during rain. Water in such pools is retained for a short time unless they are continually filled by rain.

Trees: woody plants that are usually tall and have one stem.

Vleis (singular: **vlei**): parts of a watercourse that spread out over flat valleys forming marshy wetlands with inundated grass, sedges, reeds and other specialised water-based vegetation.

Wetlands: areas of land where the soil remains waterlogged all year round or most of the year.

Woodland: Low-density forest that may have a ground layer of grasses, herbs and shrubs.

Table 1. Species common to different habitat types

Habitat	Species
Bushveld	*Afrixalus aureus* – Golden Leaf-folding Frog
	Chiromantis xerampelina – Southern Foam Nest Frog
	Hemisus marmoratus – Mottled Shovel-nosed Frog
	Phrynomantis bifasciatus – Banded Rubber Frog
	Ptychadena mossambica – Broad-banded Grass Frog
Coastal woodland	*Leptopelis natalensis* – Natal Tree Frog
Dams	*Hyperolius semidiscus* – Yellow-striped Reed Frog
	Sclerophrys gutturalis – Guttural Toad
	Sclerophrys pusilla – Flat-backed Toad
	Xenopus laevis – Common Platanna
Farmland	*Breviceps bagginsi* – Bilbo's Rain Frog
	Phrynobatrachus mababiensis – Dwarf Puddle Frog
	Phrynobatrachus natalensis – Snoring Puddle Frog
	Phrynomantis bifasciatus – Banded Rubber Frog
	Ptychadena anchietae – Plain Grass Frog
	Ptychadena nilotica – Mascarene Grass Frog
	Sclerophrys capensis – Raucous Toad
	Sclerophrys gutturalis – Guttural Toad
	Tomopterna natalensis – Natal Sand Frog
	Tomopterna tandyi – Tandy's Sand Frog
Forest	*Arthroleptis stenodactylus* – Shovel-footed Squeaker
	Arthroleptis walhbergii – Bush Squeaker
	Breviceps sopranus – Whistling Rain Frog
	Hadromophryne natalensis – Natal Cascade Frog
	Leptopelis mossambicus – Brown-backed Tree Frog
	Leptopelis natalensis – Natal Tree Frog
	Natalobatrachus bonebergi – Kloof Frog
	Phrynomantis bifasciatus – Banded Rubber Frog
	Ptychadena porosissima – Striped Grass Frog
	Strongylopus fasciatus – Striped Stream Frog
	Strongylopus grayii – Clicking Stream Frog
Fossorial	*Breviceps adspersus* – Bushveld Rain Frog
	Breviceps bagginsi – Bilbo's Rain Frog
	Breviceps carruthersi – Phinda Rain Frog
	Breviceps mossambicus – Mozambique Rain Frog
	Breviceps passmorei – Ndumo Rain Frog
	Breviceps sopranus – Whistling Rain Frog
	Leptopelis mossambicus – Brown-backed Tree Frog
Gardens	*Amietia delalandii* – Common River Frog
	Arthroleptis walhbergii – Bush Squeaker
	Cacosternum boettgeri – Boettger's Caco
	Cacosternum nanum – Bronze Caco
	Hyperolius marmoratus – Painted Reed Frog
	Kassina senegalensis – Bubbling Kassina
	Leptopelis natalensis – Natal Tree Frog
	Ptychadena anchietae – Plain Grass Frog
	Schismaderma carens – Red Toad
	Sclerophrys capensis – Raucous Toad
	Sclerophrys gutturalis – Guttural Toad

Table 1. Species common to different habitat types (continued)

Habitat	Species
Gardens (continued)	*Strongylopus fasciatus* – Striped Stream Frog *Xenopus muelleri* – Muller's Platanna
Grassland	*Afrixalus aureus* – Golden Leaf-folding Frog *Amietia delalandii* – Common River Frog *Breviceps adspersus* – Bushveld Rain Frog *Breviceps carruthersi* – Phinda Rain Frog *Breviceps mossambicus* – Mozambique Rain Frog *Cacosternum boettgeri* – Boettger's Caco *Cacosternum nanum* – Bronze Caco *Cacosternum striatum* – Striped Caco *Hadromophryne natalensis* – Natal Cascade Frog *Hemisus guttatus* – Spotted Shovel-nosed Frog *Hyperolius poweri* – Power's Long Reed Frog *Phrynobatrachus acridoides* – East African Puddle Frog *Phrynobatrachus mababiensis* – Dwarf Puddle Frog *Poyntonophrynus fenoulheti* – Northern Pygmy Toad *Ptychadena anchietae* – Plain Grass Frog *Ptychadena mossambica* – Broad-banded Grass Frog *Ptychadena oxyrhynchus* – Sharp-nosed Grass Frog *Ptychadena porosissima* – Striped Grass Frog *Ptychadena taenioscelis* – Dwarf Grass Frog *Pyxicephalus edulis* – African Bullfrog *Sclerophrys capensis* – Raucous Toad *Sclerophrys gutturalis* – Guttural Toad *Sclerophrys pusilla* – Flat-backed Toad *Strongylopus fasciatus* – Striped Stream Frog *Strongylopus grayii* – Clicking Stream Frog *Tomopterna cryptotis* – Tremolo Sand Frog *Tomopterna krugerensis* – Knocking Sand Frog *Tomopterna natalensis* – Natal Sand Frog *Tomopterna tandyi* – Tandy's Sand Frog *Xenopus muelleri* – Muller's Platanna
Leaf litter	*Arthroleptis stenodactylus* – Shovel-footed Squeaker *Arthroleptis walhbergii* – Bush Squeaker
Mangrove	*Kassina senegalensis* – Bubbling Kassina *Leptopelis mossambicus* – Brown-backed Tree Frog
Marshes	*Afrixalus aureus* – Golden Leaf-folding Frog *Hemisus marmoratus* – Mottled Shovel-nosed Frog
Open water	*Chiromantis xerampelina* – Southern Foam Nest Frog *Phlyctimantis maculatus* – Red-legged Kassina *Phrynobatrachus natalensis* – Snoring Puddle Frog *Ptychadena anchietae* – Plain Grass Frog *Ptychadena mossambica* – Broad-banded Grass Frog *Sclerophrys gutturalis* – Guttural Toad *Sclerophrys pusilla* – Flat-backed Toad *Tomopterna natalensis* – Natal Sand Frog *Xenopus laevis* – Common Platanna

Table 1. Species common to different habitat types (continued)

Habitat	Species
Ponds	*Amietia delalandii* – Common River Frog
	Hyperolius marmoratus – Painted Reed Frog
	Hyperolius pusillus – Water Lily Frog
	Hyperolius semidiscus – Yellow-striped Reed Frog
	Schismaderma carens – Red Toad
Rocky streams	*Hadromophryne natalensis* – Natal Cascade Frog
	Natalobatrachus bonebergi – Kloof Frog
Sand forest	*Leptopelis mossambicus* – Brown-backed Tree Frog
	Leptopelis natalensis – Natal Tree Frog
Savanna	*Amietia delalandii* – Common River Frog
	Breviceps adspersus – Bushveld Rain Frog
	Breviceps carruthersi – Phinda Rain Frog
	Breviceps mossambicus – Mozambique Rain Frog
	Breviceps passmorei – Ndumo Rain Frog
	Breviceps sopranus – Whistling Rain Frog
	Chiromantis xerampelina – Southern Foam Nest Frog
	Hemisus marmoratus – Mottled Shovel-nosed Frog
	Hildebrandtia ornata – Ornate Frog
	Hyperolius poweri – Power's Long Reed Frog
	Hyperolius semidiscus – Yellow-striped Reed Frog
	Leptopelis mossambicus – Brown-backed Tree Frog
	Phrynobatrachus acridoides – East African Puddle Frog
	Phrynobatrachus mababiensis – Dwarf Puddle Frog
	Phrynomantis bifasciatus – Banded Rubber Frog
	Poyntonophrynus fenoulheti – Northern Pygmy Toad
	Ptychadena anchietae – Plain Grass Frog
	Ptychadena nilotica – Mascarene Grass Frog
	Ptychadena mossambica – Broad-banded Grass Frog
	Ptychadena oxyrhynchus – Sharp-nosed Grass Frog
	Ptychadena porosissima – Striped Grass Frog
	Ptychadena taenioscelis – Dwarf Grass Frog
	Pyxicephalus edulis – African Bullfrog
	Sclerophrys garmani – Eastern Olive Toad
	Sclerophrys gutturalis – Guttural Toad
	Strongylopus fasciatus – Striped Stream Frog
	Strongylopus grayii – Clicking Stream Frog
	Tomopterna cryptotis – Tremolo Sand Frog
	Tomopterna krugerensis – Knocking Sand Frog
	Tomopterna natalensis – Natal Sand Frog
	Tomopterna tandyi – Tandy's Sand Frog
Shallow water	*Phrynobatrachus mababiensis* – Dwarf Puddle Frog
	Sclerophrys pusilla – Flat-backed Toad
	Xenopus laevis – Common Platanna
Soil	*Hemisus guttatus* – Spotted Shovel-nosed Frog
	Hildebrandtia ornata – Ornate Frog
	Tomopterna cryptotis – Tremolo Sand Frog
	Tomopterna krugerensis – Knocking Sand Frog
	Tomopterna natalensis – Natal Sand Frog
	Tomopterna tandyi – Tandy's Sand Frog

Table 1. Species common to different habitat types (continued)

Habitat	Species
Streams	*Amietia delalandii* – Common River Frog
	Cacosternum striatum – Striped Caco
	Hadromophryne natalensis – Natal Cascade Frog
	Natalobatrachus bonebergi – Kloof Frog
	Ptychadena nilotica – Mascarene Grass Frog
	Pyxicephalus edulis – African Bullfrog
	Sclerophrys capensis – Raucous Toad
	Strongylopus fasciatus – Striped Stream Frog
	Strongylopus grayii – Clicking Stream Frog
	Tomopterna tandyi – Tandy's Sand Frog
	Xenopus laevis – Common Platanna
Temporary pools	*Cacosternum nanogularum* – KwaZulu Caco
	Hildebrandtia ornata – Ornate Frog
	Phrynobatrachus acridoides – East African Puddle Frog
	Ptychadena anchietae – Plain Grass Frog
	Ptychadena taenioscelis – Dwarf Grass Frog
	Pyxicephalus edulis – African Bullfrog
	Tomopterna cryptotis – Tremolo Sand Frog
	Tomopterna krugerensis – Knocking Sand Frog
	Tomopterna tandyi – Tandy's Sand Frog
Trees	*Chiromantis xerampelina* – Southern Foam Nest Frog
	Leptopelis mossambicus – Brown-backed Tree Frog
	Leptopelis natalensis – Natal Tree Frog
Vleis	*Cacosternum boettgeri* – Boettger's Caco
	Cacosternum nanum – Bronze Caco
	Phrynobatrachus acridoides – East African Puddle Frog
	Ptychadena oxyrhynchus – Sharp-nosed Grass Frog
	Sclerophrys garmani – Eastern Olive Toad
	Sclerophrys gutturalis – Guttural Toad
	Xenopus muelleri – Muller's Platanna
Wetlands	*Afrixalus aureus* – Golden Leaf-folding Frog
	Afrixalus delicatus – Delicate Leaf-folding Frog
	Afrixalus fornasini – Greater Leaf-folding Frog
	Amietia delalandii – Common River Frog
	Cacosternum striatum – Striped Caco
	Hyperolius argus – Argus Reed Frog
	Hyperolius marmoratus – Painted Reed Frog
	Hyperolius pickersgilli – Pickersgill's Reed Frog
	Hyperolius pusillus – Water Lily Frog
	Hyperolius tuberilinguis – Tinker Reed Frog
	Ptychadena anchietae – Plain Grass Frog
	Ptychadena nilotica – Mascarene Grass Frog
	Ptychadena mossambica – Broad-banded Grass Frog
Woodland	*Breviceps carruthersi* – Phinda Rain Frog
	Breviceps passmorei – Ndumo Rain Frog
	Leptopelis natalensis – Natal Tree Frog
	Phrynobatrachus mababiensis – Dwarf Puddle Frog
	Phrynomantis bifasciatus – Banded Rubber Frog
	Ptychadena anchietae – Plain Grass Frog
	Ptychadena oxyrhynchus – Sharp-nosed Grass Frog
	Ptychadena porosissima – Striped Grass Frog

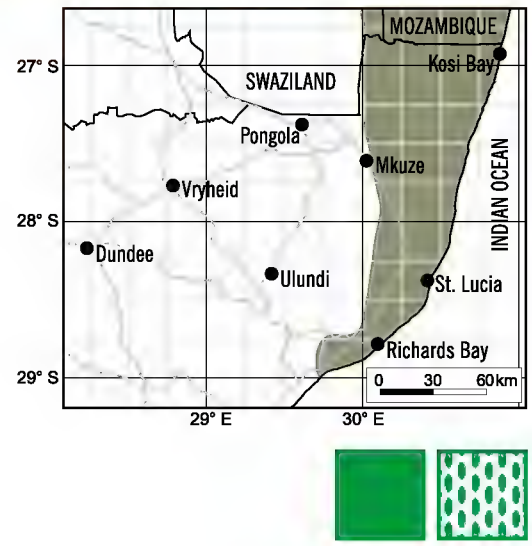
SPECIES DESCRIPTIONS

1. Shovel-footed Squeaker

Arthroleptis stenodactylus Pfeffer, 1893 | Umanswininiza Onyawo Zingamafosholo

Description

Maximum size: 45 mm. **Colour**: Varies from light- to dark-brown. A thin, pale vertebral line is visible in most frogs. A 3-lobed, dark hourglass pattern is usually visible on the back. Flanks with light-grey markings. A dark facial mask extends from the snout, through the eye, to the base of the forearm. **Body**: Stocky with a thick, broad head. Tympanum slightly visible. The skin on the back is smooth. The underside feels granular and has a concentration of small grey spots on the chest. **Forearms**: Fingers without webbing or terminal discs. **Hind legs**: Toes without webbing or terminal discs. **Sexual dimorphism**: Males have longer third finger, darker throat and small spines on the legs and the back.



Call

This frog makes a high-pitched metallic *peep-peep* or *wip-wip-wip* chirping sound.

Key ID points

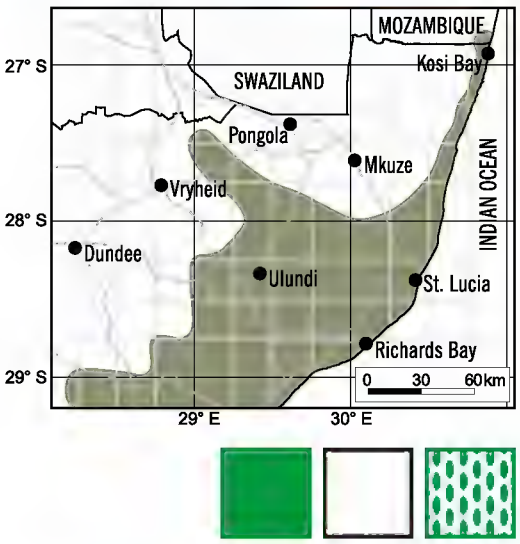
- Eyes: large; pupil horizontal.
- Metatarsal tubercle noticeably larger than in other Squeakers.
- Elongated third finger in males.
- Diamond-shaped hourglass pattern on the back.

2. Bush Squeaker

Arthroleptis wahlbergii Smith, 1849 | Umanswininiza Wasehlathini

Description

Maximum size: 25 mm. **Colour**: Varies from beige to dark- or reddish-brown. Thin, pale vertebral line visible in most frogs. A 3-lobed, dark hourglass pattern is prominent on the back. Pale triangular patch visible on the head. Flanks with small white spots. A dark facial mask extends from the snout, through the eye, to the base of the fore-arm. **Body**: Small and stocky with slightly pointed snout. Tympanum slightly visible. The skin on the back is smooth. The underside feels granular and has a concentration of small grey and white spots on the chest. **Forearms**: Fingers without webbing or terminal discs. **Hind legs**: No web-bing on toes, toe tips sometimes swollen. **Sexual dimor-phism**: Males have longer third toe, darker throats and the skin on their backs is covered with spiny outgrowths.



Call

High-pitched, drawn-out, metallic *wheep-wheep* or *wheepee-wheepee* chirping sounds.

Key ID points

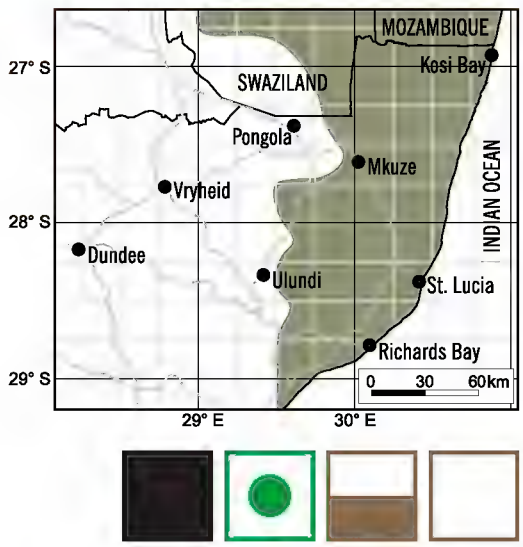
- Eyes: large; pupil horizontal.
- Only found in KwaZulu-Natal midlands and coastal forests.
- The inner metatarsal tubercle is not noticeable.

3. Brown-backed Tree Frog

Leptopelis mossambicus Poynton, 1985 | Isele Lasezihlahleni Elinsundu

Description

Maximum size: 63 mm. **Colour**: Light-brown skin with dark-brown horseshoe marking on the back. A dark facial mask extends from the snout, through the eye, to the base of the forearm. Juvenile frogs plain green. **Body**: Robust body with long limbs, blunt snout, large protruding eyes and nostrils close to the tip of the snout. Tympanum visible. The skin on the back is granular. The underside has an off-white colour with dark markings on throat. **Forearms**: Fingers with well-developed terminal discs and no webbing. **Hind legs**: Toes with terminal discs and minimal webbing. **Sexual dimorphism**: Males have pectoral gland on the chest.



Call

A loud, frequently repeated *kwa-kwa* or *wala* sound.

Key ID points

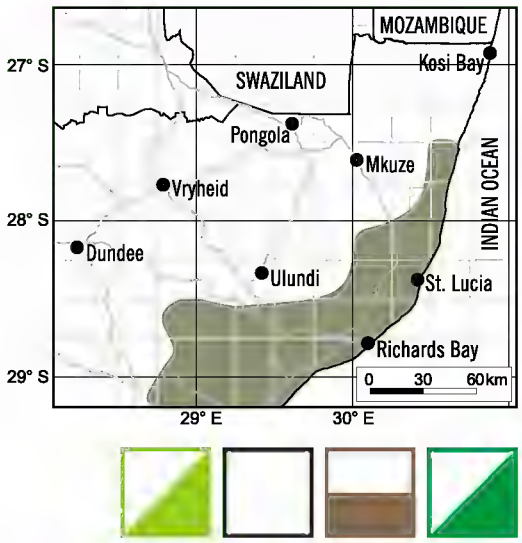
- Eyes: large; pupil vertical.
- Dark horseshoe marking on the back.
- Large metatarsal tubercle.
- Toes with minimal webbing.

4. Natal Tree Frog

Leptopelis natalensis (Smith, 1849) | Isele Lasezihlahleni LaseNatali

Description

Maximum size: 65 mm. **Colour**: Uniform lime-green to brown or light-brown skin with emerald-green blotches occasionally surrounded by thin black outline. Vertebral line absent. **Body**: Compact with long limbs, blunt snout and large protruding eyes. Nostrils close to the tip of the snout. Tympanum visible. The skin on the back is slightly granular. The underside feels granular and has an off-white colour. **Forearms**: Fingers with large terminal discs and no webbing. **Hind legs**: Toes with terminal discs and extensive webbing. **Sexual dimorphism**: No clear differences between male and female.



Call

A loud *yack-yack* sound that is usually followed by drawn-out *eeeeee* buzz.

Key ID points

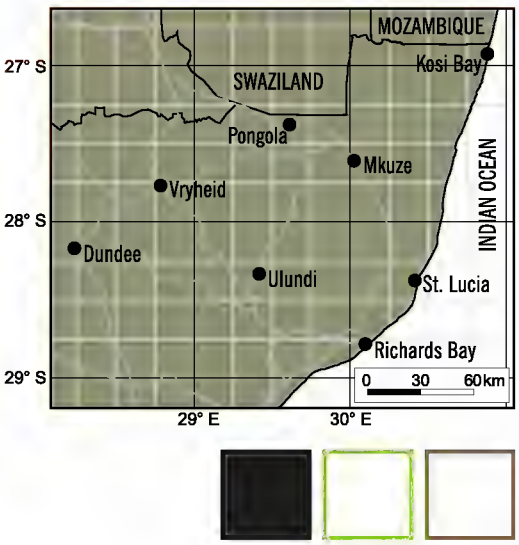
- Eyes: large; pupil vertical.
- No horseshoe pattern on the back.
- Larger terminal discs on both fingers and toes.
- Toes with extensive webbing.
- Found only in KwaZulu-Natal.

5. Bushveld Rain Frog

Breviceps adspersus (Peters, 1882) | Isinana Sasehlathini

Description

Maximum size: 60 mm. **Colour**: Brown skin with yellowish or orange patches and dark blotches. Pale vertebral line sometimes visible. A dark facial mask extends from the eye to the base of the forearm. **Body**: Broad and chubby with short legs and flattened face. Tympanum usually not visible. The skin on the back is granular. The underside feels smooth and usually has no markings but may sometimes have a few dark spots. **Forearms**: Fingers without webbing or terminal discs. **Hind legs**: Toes without webbing or terminal discs. **Sexual dimorphism**: Males have a darker throat, which sometimes has a white stripe in the middle.



Call

A series of short, pulsed whistling sounds.

Key ID points

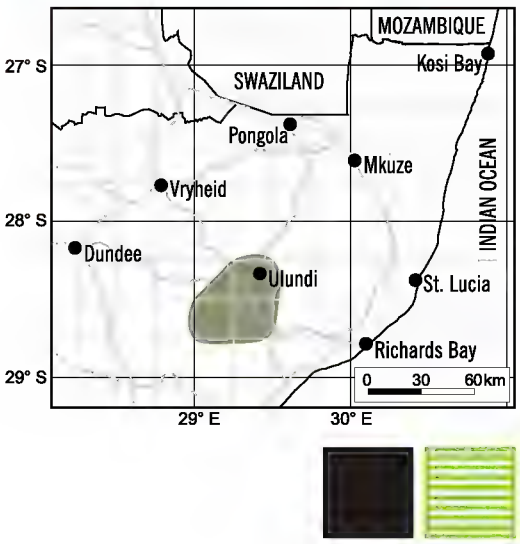
- Eyes: small; pupil horizontal.
- Chubby, swollen-looking body.
- Dark facial mask.
- No webbing on limbs.
- Smooth, white and unmarked underside.
- Inner metatarsal tubercle large and curved.
- Length and width of inner and outer toes are equal.

6. Bilbo's Rain Frog

Breviceps bagginsi Minter, 2003 | Isinana SikaBilbo

Description

Maximum size: 29 mm. **Colour**: Varies from light- to dark-brown with small dark spots. Pale patches visible on the back. Brown flanks with a few small white spots. A dark facial mask extends from the eyes to the base of the forearm. **Body**: Broad and chubby with short legs, flattened face and small snout. Tympanum not visible. The skin on the back is slightly granular. The underside feels smooth to slightly granular and has a white colour with small dark spots. **Forearms**: Fingers without webbing or terminal discs. **Hind legs**: Toes without webbing or terminal discs. **Sexual dimorphism**: Males have darker throats.



Call

A series of 7–20 short high-pitched whistles in quick succession.

Key ID points

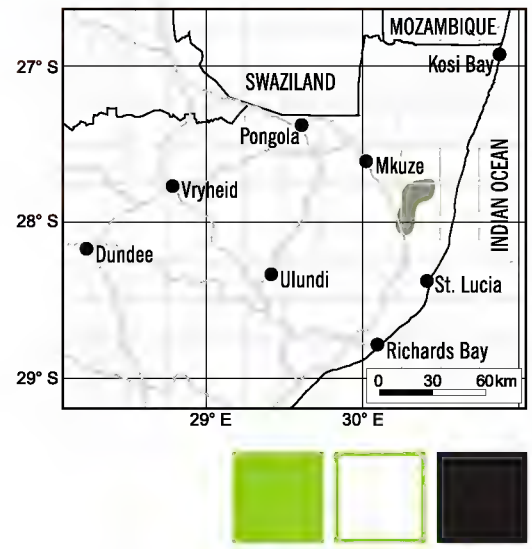
- Eyes: small; pupil horizontal.
- White underside with small dark spots.
- Dark facial mask.
- No webbing on limbs.
- Length and width of inner and outer toes are equal.
- Inner and outer metatarsal tubercles separated by a cleft.

7. Phinda Rain Frog

Breviceps carruthersi Du Preez, Netherlands & Minter, 2017| Isinana SakwaPhinda

Description

Maximum size: 59 mm. **Colour**: Brown skin with large, paired yellowish blotches on the back. Flanks usually with three yellowish blotches. Pale vertebral line usually not visible or only visible at the hind part of the body. A dark facial mask extends from the eye and ends halfway to the armpits. **Body**: Broad and chubby with short legs and flattened face. Tympanum not visible. The skin on the back is granular. The underside feels smooth and usually has no markings, but may sometimes have a few dark spots. **Forearms:** Fingers without webbing or terminal discs. **Hind legs**: Toes without webbing or terminal discs. Short inner and outer toes. **Sexual dimorphism**: Males have a dark grey or yellowish-grey throats. Females are larger.



Call

A series of 8 to 21 short whistles.

Key ID points

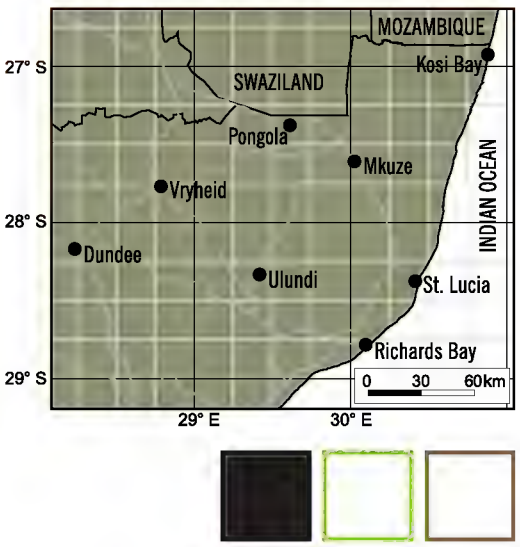
- Eyes: small; pupil horizontal.
- Chubby, swollen-looking body.
- Dark facial mask.
- No webbing on limbs.
- Smooth, white and unmarked underside.
- Inner toe as long as wide.

8. Mozambique Rain Frog

Breviceps mossambicus Peters, 1854 | Isinana SaseMozambique

Description

Maximum size: 52 mm. **Colour**: High variation in skin colour from light- to dark-brown, to brick-red or even yellowish with white to light-brown and dark-brown patches. A dark facial mask extends from the eye to the base of the forearm. Pale vertebral line usually visible. **Body**: Broad and chubby with short legs and flattened face. Tympanum not visible. The skin on the back is granular or smooth. The underside feels smooth and has a white colour, which sometimes has brown markings. **Forearms**: Fingers without webbing or terminal discs. **Hind legs**: Toes without webbing or terminal discs. **Sexual dimorphism**: Males have darker throats.



Call

Consists of a series of 2–5 short chirping sounds.

Key ID points

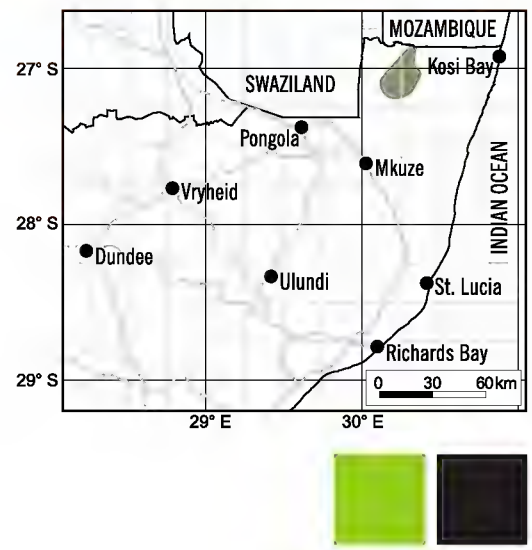
- Eyes: small; pupil horizontal.
- Inner and outer toes are wider than long.
- Facial mask is clearly visible.
- Hands have moderate to well-developed tubercles on the underside.

9. Ndumo Rain Frog

Breviceps passmorei Minter, Netherlands & Du Preez, 2017 | Isinana SakwaNdumo

Description

Maximum size: 59 mm. **Colour**: Brown skin with pairs of rounded to irregular, pale blotches on the back. Flanks with three to four pale blotches surrounded by dark spots. Pale vertebral line mostly visible. A dark facial mask extends from the eye to the armpit. **Body**: Broad and chubby with short legs and short head. Tympanum not visible. The skin on the back is granular. The underside feels smooth and has no markings. **Forearms:** Fingers without webbing or terminal discs. **Hind legs**: Toes without webbing or terminal discs. Short inner and outer toes. **Sexual dimorphism**: Males have a darker throat or spotted throat. Females have pale throat with a few dark spots. Females much larger than males.



Call

A series of long, pulsed whistling sounds, often grouped in twos or threes.

Key ID points

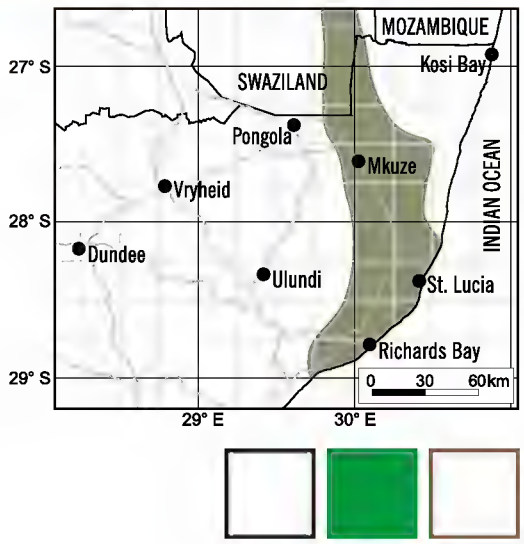
- Eyes: small; pupil horizontal.
- Chubby, swollen-looking body.
- Prominent facial mask.
- No webbing on limbs.
  Smooth, white and unmarked underside.
- Single basal subarticular tubercle on hand.
- Inner toe as long as wide.

10. Whistling Rain Frog

Breviceps sopranus Minter, 2003 | Isinana Sekhwela/Isinana Somthshingo

Description

Maximum size: 26 mm. **Colour**: Olive, grey or pale-gold skin with light-brown to pink patches and small dark spots. Pale vertebral line sometimes visible. A dark facial mask extends from the eye to base of the forearm. **Body**: Broad and chubby with short legs, flattened face and small snout. Tympanum not visible. The skin on the back is slightly granular. The underside feels smooth to slightly granular and has a white colour with dark spots. **Forearms**: Fingers without webbing or terminal discs. **Hind legs**: Toes without webbing or terminal discs. **Sexual dimorphism**: Males have a gular patch that is darker or with dark spots.



Call

A long, drawn-out, high-pitched whistle that is repeated every two or three seconds.

Key ID points

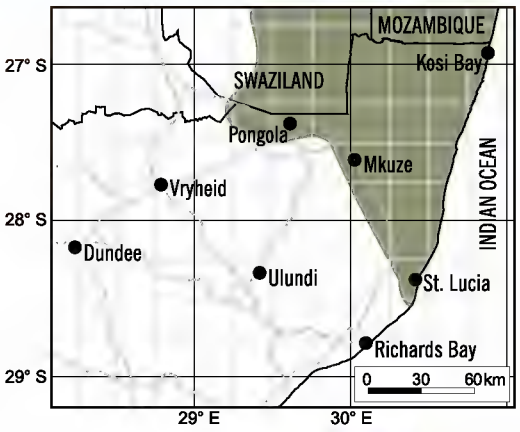
- Eyes: small; pupil horizontal.
- Length and width of inner and outer toes are equal.
- No webbing on limbs.
- Occurs only in northern parts of KwaZulu-Natal and Swaziland.
- Inner and outer metatarsal tubercles separated by a deep cleft.

11. Northern Pygmy Toad

Poyntonophrynus fenoulheti (Hewitt & Methuen, 1913) | Ixoxo Elifishane

Description

Maximum size: 43 mm. **Colour**: Grey to brown skin with dark blotches and often orange spots and other pale markings. **Body**: Small and flattened with broad head and blunt snout. Hind legs noticeably longer than forearms. Tympanum visible. Parotoid glands visible behind each eye. The skin on the back is leathery with scattered warts. The underside feels leathery to slightly granular and has an off-white colour with a few dark sports. **Forearms**: Fingers without webbing or terminal discs. First two fingers with nuptial pads. **Hind legs**: No skin folds on tarsus. Toes with minimal webbing and no terminal discs. **Sexual dimorphism**: Males have yellow to deep orange throats and a dark gular region.



Call

A series of long, high-pitched creaking sounds in quick succession.

Key ID points

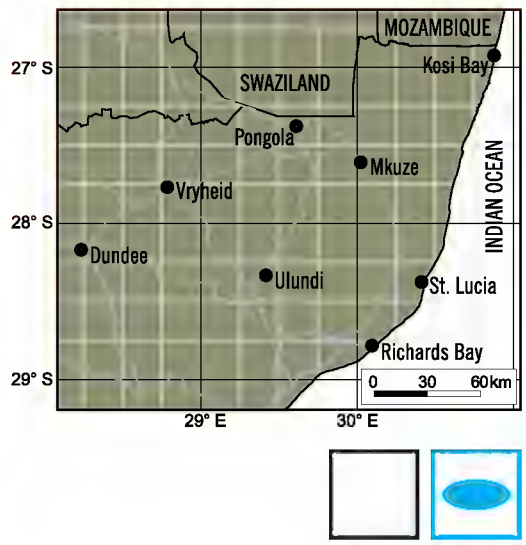
- Eyes: large; pupil horizontal.
- Distinct tympanum.
- Granular skin on snout.
- Underside occasionally has black spots.

12. Red Toad

Schismaderma carens (Smith, 1848) | Ixoxo Elibomvu

Description

Maximum size: 92 mm. **Colour**: Brick-red to light-brown skin with two small dark spots on the lower back. A dark-coloured glandular ridge usually extends from above the tympanum to the hind leg. **Body**: Moderately built and more slender than other toads. Broad head with blunt snout. Hind legs are noticeably longer than forearms. Tympanum visible. Parotoid gland not visible. The skin on the back is leathery without large elevations found in other toads. The underside has an off-white colour with small dark spots. **Forearms**: Fingers without webbing or terminal discs. **Hind legs**: Prominent fold of skin on tarsus. Toes with moderate webbing and no terminal discs. **Sexual dimorphism**: Breeding males have nuptial pads on the first three fingers.



Call

A long, low, repetitive *whoob* sound.

Key ID points

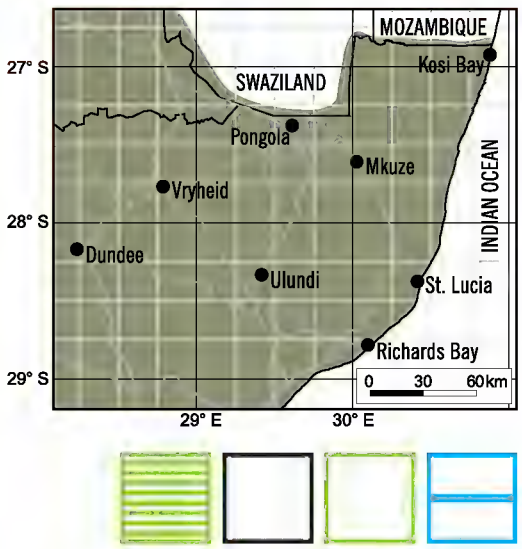
- Eyes: large; pupil horizontal.
- Large tympanum.
- Two dark markings on the lower back.
- Glandular ridge of skin on the side of the body.
- Parotoid gland not visible.

13. Raucous Toad

Sclerophrys capensis Tshudi, 1838 | Ixoxo Eliklabalasayo

Description

Maximum size: 115 mm. **Colour**: Olive-grey to brown skin with dark patches. Dark patches behind eyes fused to form bar. No dark patches on snout. **Body**: Thick and robust with broad head and blunt snout. Hind legs noticeably longer than forearms. Tympanum visible. Prominent parotoid glands behind each eye. The skin on the back is rough and covered with wart-like projections. The underside feels granular and leathery, and has an off-white colour. **Forearms**: Fingers without webbing or terminal discs. **Hind legs**: Prominent fold of skin on tarsus. Toes with little webbing and no terminal discs. **Sexual dimorphism**: Male with dark throat and nuptial pads on fingers during the breeding season.



Call

A series of rasping *kwaa-kwaa* quacking sounds resembling a duck.

Key ID points

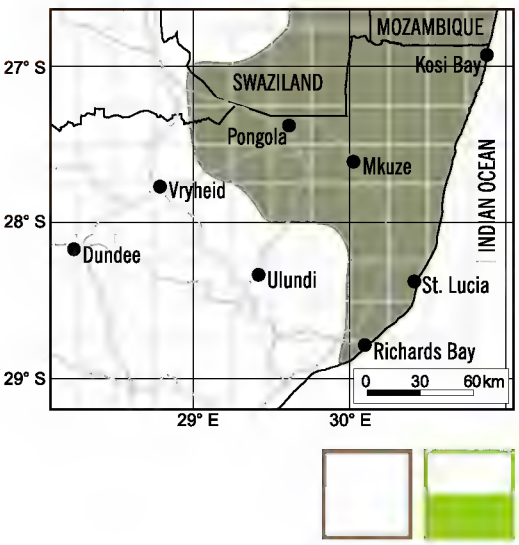
- Eyes: large; pupil horizontal.
- No red pigmentation on the thighs.
- No dark patches on the snout.
- Dark patches behind eyes fuse to form a bar.

14. Eastern Olive Toad

Sclerophrys garmani (Meek, 1897) | Ixoxo Eliluhlaza Okotshani

Description

Maximum size: 115 mm. **Colour**: Yellow-brown to olive-green skin with dark-brown to reddish-brown patches. Patches not present on top of snout. A pale-brown vertebral line is visible in most frogs. **Body**: Thick and robust with broad head and blunt snout. Hind limbs noticeably longer than forearms. Tympanum visible. Prominent parotoid glands visible behind each eye. The skin on the back is rough and covered with wart-like elevations. The underside feels granular and leathery, and has an off-white colour. **Forearms**: Fingers without webbing or terminal discs. **Hind legs**: Red pigmentation on thighs. Toes with minimal webbing and no terminal discs. **Sexual dimorphism**: Males with grey to dark-grey throats, and dark nuptial pads on outer fingers.



Call

A loud, braying *kwaa-kwaa* sound.

Key ID points

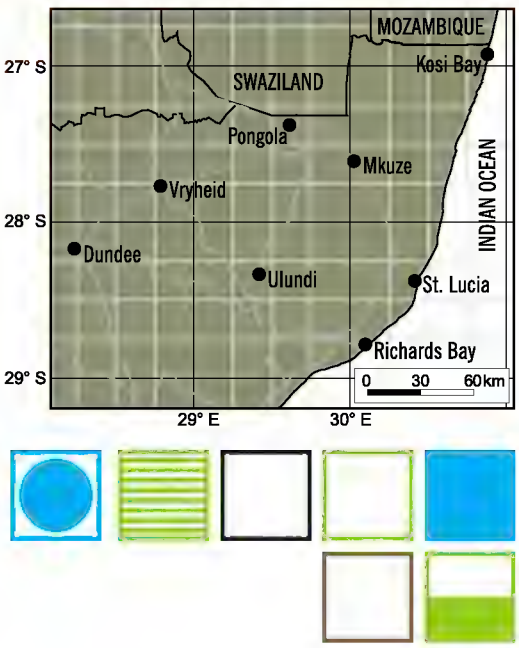
- Eyes: large; pupil horizontal.
- Dark patches behind the eyes do not fuse into a bar.
- No dark patches on snout.
- Red pigmentation on legs.
- Glands under the forearm form a row of pale tubercles.

15. Guttural Toad

Sclerophrys gutturalis (Power, 1927) | Ixoxo Lembodlomane

Description

Maximum size: 120 mm. **Colour**: Light- to dark-brown skin with dark-brown patches. Small yellowish spots sometimes visible between patches. Brown vertebral line sometimes visible. The space between the pairs of dark patches on the snout and behind the eyes form a pale cross on the head. **Body**: Thick and robust with broad head and blunt snout. Hind legs noticeably longer than forearms. Tympanum visible. Prominent parotoid glands visible behind each eye. The skin on the back is rough and covered with wart-like projections. The underside feels granular and leathery, and has an off-white colour. **Forearms**: Fingers without webbing or terminal discs. **Hind legs**: Red pigmentation on thighs. Toes with little webbing and no terminal discs. **Sexual dimorphism**: Males with darker throats, and dark nuptial pads on outer fingers.



Call

A deep guttural snoring sound that resembles a ping-pong ball being dropped.

Key ID points

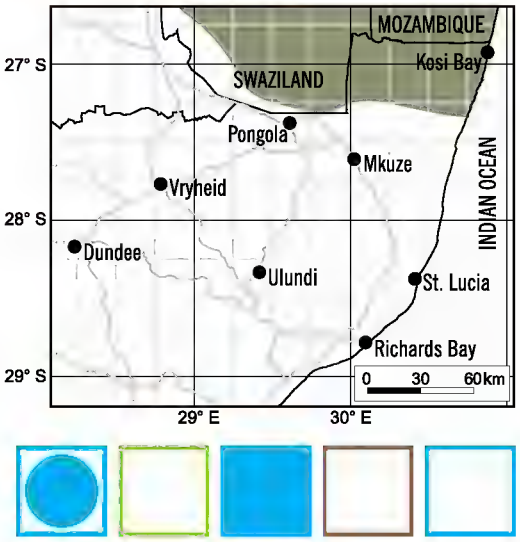
- Eyes: large; pupil horizontal.
- Red pigmentation on thighs.
- Dark patches behind the eyes do not fuse into a bar.
- The space between the pairs of dark patches on the snout and behind the eyes form a pale cross on the head.
- Glands under the forearm form a row of pale tubercles.

16. Flat-backed Toad

Sclerophrys pusilla (Mertens, 1937) | Ixoxo Lomhlane Oyisicaba

Description

Maximum size: 80 mm. **Colour**: Light- to dark-brown skin with dark-brown patches. Thin vertebral line usually visible. The space between the pairs of dark patches on the snout and behind the eyes form a pale cross on the head similar to the Guttural Toad. **Body**: Moderately sized and bulky with broad head and blunt snout. Hind legs noticeably longer than forearms. Tympanum visible. Parotoid glands behind each eye not prominent. The skin on the back is rough and covered with warts. The underside feels granular and has an off-white colour with dark-grey spots. **Forearms**: Fingers without webbing or terminal discs. **Hind legs**: Prominent fold of skin on tarsus. Fingers with minimal webbing and no terminal discs. **Sexual dimorphism**: Males have darker throats with yellow pigmentation.



Call

A raucous and quick *quork-quork-quork-quork* sound.

Key ID points

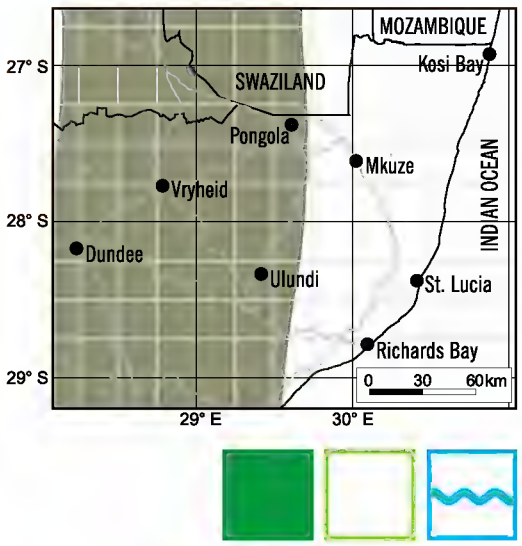
- Eyes: large; pupil horizontal.
- The space between the pairs of dark patches on the snout and behind the eyes form a pale cross on the head.
- No red pigmentation on the legs.
- Dark patches behind the eyes do not fuse into a bar.
- Glands under the forearm form a row of pale tubercles.

17. Natal Cascade Frog

Hadromophryne natalensis (Hewitt, 1913) | Isele Lasempophomeni

Description

Maximum size: 65 mm. **Colour**: Dark-brown or black skin with green or yellow markings. Broad dark bars and pale thin bars on thighs. **Body**: Flattened and slender with rounded snout. Tympanum not visible. The skin on the back is granular. The underside feels smooth and has an off-white colour with light-brown markings under the throat. **Forearms**: Fingers with terminal discs and webbing. **Hind legs**: Toes with extensive webbing. Terminal discs on toes larger than terminal discs on fingers. **Sexual dimorphism**: Females larger than males. Breeding males with swollen forearms and spines on chest and inner fingers.



Call

A high-pitched, bell-like sound.

Key ID points

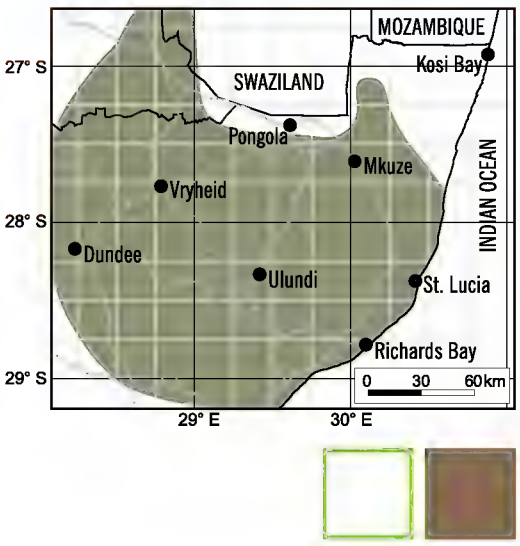
- Eyes: large and protruding; pupil vertical.
- The tips of toes and fingers with terminal discs.
- Extensive webbing on the toes.
- Granular fold of skin behind the eyes.

18. Spotted Shovel-nosed Frog

Hemisus guttatus (Rapp, 1842) | Isinana Esimabhadubhadu

Description

Maximum size: 80 mm. **Colour**: Dark-olive to brown skin with bright yellow spots. Vertebral line not visible. **Body**: Round and plump with short, muscular limbs. Hard and sharply pointed snout used for digging. The head is small and hard, and has a fold of skin behind it. Tympanum not visible. The skin on the back is smooth. The underside feels smooth and has a white colour. **Forearms**: Thick fingers without webbing or terminal discs. **Hind legs**: Toes without webbing or terminal discs. **Sexual dimorphism**: Males have darker throats.



Call

A long, high-pitched buzzing sound.

Key ID points

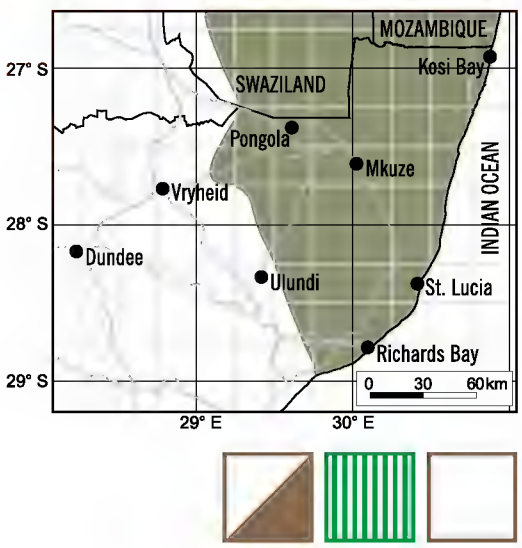
- Eyes: small; pupil vertical, but difficult to see as the eyes are small.
- No vertebral line.
- Prominent yellow spots on purple-brown background.
- No webbing on limbs.
- Large, curved inner metatarsal tubercle.

19. Mottled Shovel-nosed Frog

Hemisus marmoratus (Peters, 1854) | Isinana Esipendiwe

Description

Maximum size: 55 mm. **Colour**: Light-grey to light-brown skin with brown markings. Pale vertebral line sometimes visible. Yellow upper lip. **Body**: Round and plump with short, muscular limbs. Hard and sharply pointed snout used for digging. The head is small and hard, and has a fold of skin behind it. Tympanum not visible. The skin on the back is smooth to slightly granular. The underside feels smooth and has a white colour. **Forearms**: Thick fingers without webbing or terminal discs. **Hind legs**: Toes with minimal webbing and no terminal discs. **Sexual dimorphism**: Males have darker throats.



Call

A long, high-pitched buzzing sound that lasts for about 5 seconds.

Key ID points

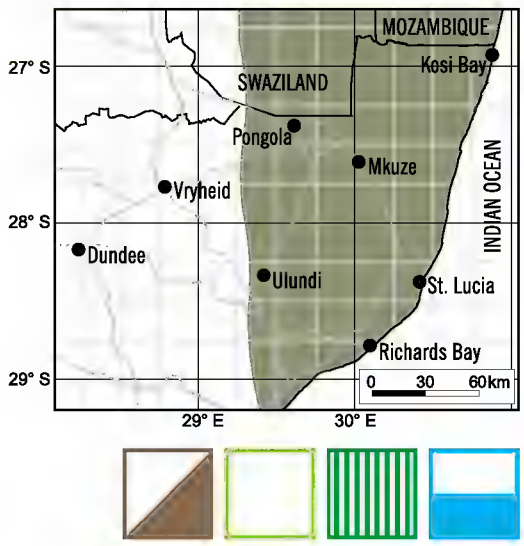
- Eyes: small; pupil vertical, but difficult to see as eyes are small.
- Reduced webbing on toes.
- Marbled back and yellow upper lip.
- A vertebral line is sometimes visible.

20. Golden Leaf-folding Frog

Afrixalus aureus Pickersgill, 1984 | Umgqagqa Oyigolide

Description

Maximum size: 24 mm. **Colour**: Varies from light brown to a bright golden-yellow. Flanks sometimes have a dark band extending from the snout to the base of the hind leg and this band sometimes has small spots. Faint vertebral line sometimes visible. **Body**: Small and elongated with pointed snout. Tympanum not visible. The skin on the back is smooth, but tiny spines cover the head and snout. The underside has a white colour and feels smooth, but may sometimes have spines on the gular region. **Forearms**: Fingers with terminal discs and minimal webbing. **Hind legs**: Dark band on tibia. Toes with terminal discs and moderate webbing. **Sexual dimorphism**: Male gular region covered by bright-orange gular disc. Males also have small spines scattered on their back.



Call

A short, repeated, buzzing sound.

Key ID points

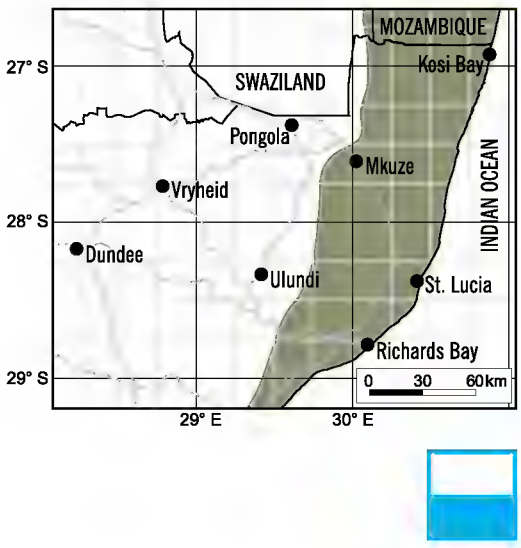
- Eyes: large; pupil vertical.
- Entire gular region of males covered by gular disc.
- Tibia has a dark band through it.
- Minimal webbing on the fingers and moderate webbing on the toes.
- Most frogs have no spines on the underside.

21. Delicate Leaf-folding Frog

Afrixalus delicatus Pickersgill, 1984 | Umgqagqa Othambile

Description

Maximum size: 22 mm. **Colour**: Varies between different shades of yellow or brown. Flanks sometimes have a dark band extending from the snout to the base of the hind leg and this band sometimes has small spots. Faint vertebral line sometimes visible. **Body**: Small and elongated with pointed snout. Tympanum not visible. The skin on the back has scattered spines. The underside feels slightly granular and has scattered spines with a concentration of spines on the middle of the abdomen. **Forearms**: Fingers with terminal discs and minimal webbing. **Hind legs**: Broad band sometimes visible on tibia. Toes with terminal discs and moderate webbing. **Sexual dimorphism**: Males have yellow or orange gular disc covering part of the gular region.



Call

A long *buzzing* sound
mixed with a high-pitched *zick* sound in between.

Key ID points

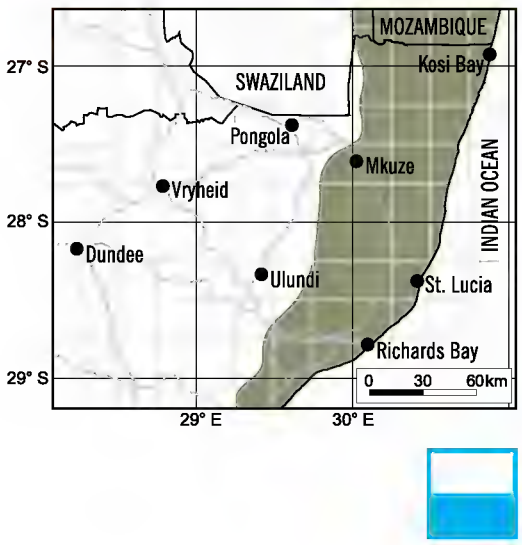
- Eyes: large; pupil vertical.
- Part of the gular region is covered by a gular disc.
- Broad band across tibia is sometimes not visible.
- No small spines concentrated on the head.
- The underside has spines concentrated on the centre of the abdomen.

22. Greater Leaf-folding Frog

Afrixalus fornasinii (Bianconi, 1849) | Umgqagqa Omkhulu

Description

Maximum size: 40 mm. **Colour**: Brown skin with small white spots. A cream or pale band extends from the tip of the snout, separating before the eyes to form a V-shape with a brown colour in the middle. This band further extends past the top of the eyes, along the flanks to the vent. A similar colour band is visible on the top part of the tibia. **Body**: Larger than other Leaf-folding Frogs and elongated with pointed snout. Tympanum not visible. The back is covered by small spines and each spine is on a white spot. The underside feels granular and has an off-white colour with no spines. **Forearms**: Fingers with prominent webbing and terminal discs. **Hind legs**: Toes with prominent webbing and terminal discs. **Sexual dimorphism**: Males have yellow gular disc on gular region.



Call

A loud *clack* sound repeated quickly then followed by a short, low *buzz*.

Key ID points

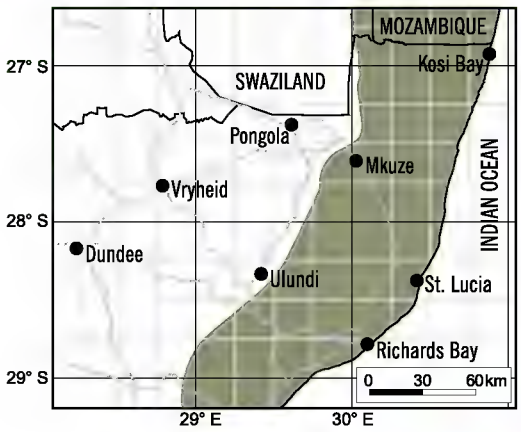
- Eyes: large; pupil vertical.
- Top part of tibia covered by a pale band.
- Spines on top of white speckles.
- Larger than other Leaf-folding Frogs.
- No spines on the underside.

23. Argus Reed Frog

Hyperolius argus Peters, 1854 | Umgqagqa i-Argus

Description

Maximum size: 34 mm. **Colour**: Male frogs have grey or green skin with small brown dots on the back. Flanks have yellow band with black borders. Female frogs with purple-brownish skin. Yellow band with black borders runs in V-shape from one eye to the tip of the snout then onto the other eye. This band sometimes continues to the flanks as a solid band or gets broken up into a series of dots on the sides of the body. **Body**: Less elongated than other Reed Frogs and snout is rounded. Tympanum not visible. The skin on the back is smooth. The underside feels granular and has either a white or yellow colour. **Forearms**: Fingers with webbing and terminal discs. **Hind legs**: Toes with extensive webbing and terminal discs. **Sexual dimorphism**: Males and females have different skin colour and markings. Breeding males have yellow, granular throats.



Call

A rapidly repeated *cluck* sound.

Key ID points

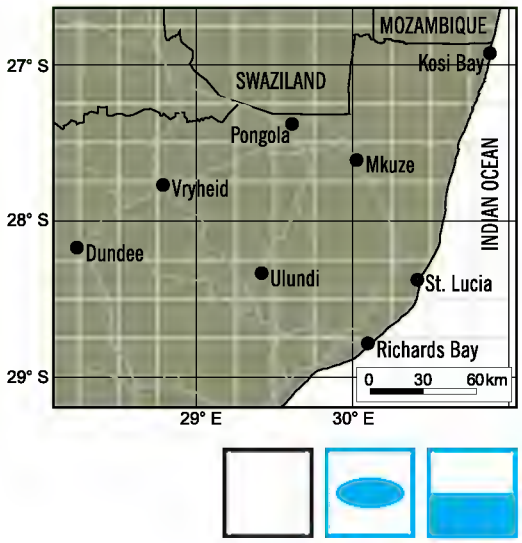
- Eyes: large; pupil horizontal.
- Markings on the back are distinct from other species.
- Less elongated body than other Reed Frogs.
- Hidden parts of the body have an orange to brown colour.

24. Painted Reed Frog

Hyperolius marmoratus Rapp, 1842 | Umgqagqa Opendiwe

Description

Maximum size: 33 mm. **Colour**: Skin colour and patterns have great variation. This frog has three subspecies with colour that corresponds with their geographic distribution. Two of these subspecies are found in KwaZulu-Natal. One subspecies has patterns with brown, black, orange and yellow markings. The other has black, red, white and yellow stripes running from the snout to the vent and across the limbs. **Body**: Slightly elongated with rounded snout. Tympanum not visible. The skin on the back is smooth. The underside feels granular and has a white or pink colour. **Forearms**: Fingers with terminal discs and minimal webbing. **Hind legs**: Toes with terminal discs and moderate webbing. **Sexual dimorphism**: Breeding males have grey gular disc on gular region.



Call

A short, high-pitched *whipp-whipp* whistling sound repeated every second.

Key ID points

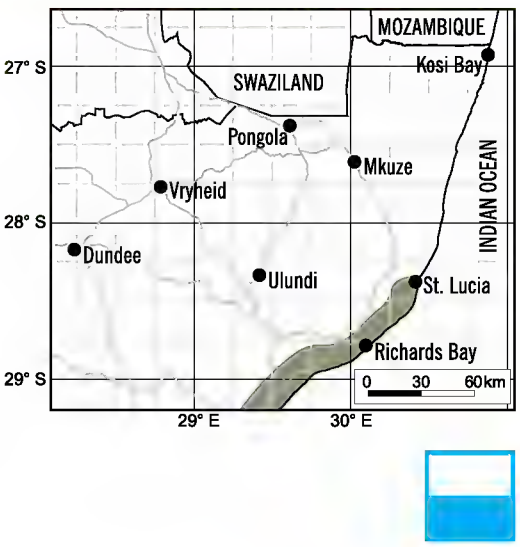
- Eyes: large; pupil horizontal.
- Rounded snout.
- Distinct patterns on the back.
- Hidden surfaces of the body have red colouring.

25. Pickersgill's Reed Frog

Hyperolius pickersgilli Raw, 1982 | Umgqagqa Ka-Pickersgill

Description

Maximum size: 29 mm. **Colour**: Male frogs have brown skin with white to silver band extending from the snout, over the eye, to the base of the hind leg. Female frogs have bright yellow-green colour with no bands, but may instead have dark stripe on the side of the snout. **Body**: Small and elongated with slightly pointed snout. Tympanum not visible. The skin on the back is granular. The underside feels smooth and has a yellowish to white colour. **Forearms**: Fingers with terminal discs and minimal webbing. **Hind legs**: Toes with terminal discs and prominent webbing. **Sexual dimorphism**: Males and females have different colours as mentioned above.



Call

A soft, insect-like chirping sound.

Key ID points

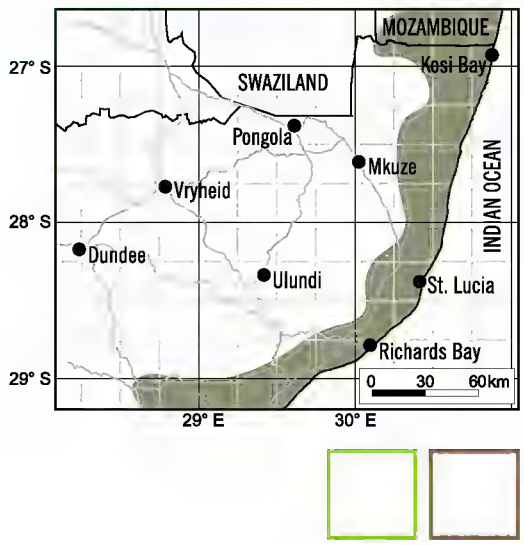
- Eyes: large; pupil horizontal.
- Dorsal colour patterns are different to other Reed Frogs.
- Hidden surfaces of the body lack pigmentation.
- Restricted to certain parts of KwaZulu-Natal.

26. Power's Long Reed Frog

Hyperolius poweri Loveridge, 1938 | Umgqagqa Omude

Description

Maximum size: 22 mm. **Colour**: Brown to green skin with small dark dots. Vertebral line sometimes visible. Some frogs have pale line extending from the eye to the base of the hind leg. **Body**: Small and narrow with pointed snout that protrudes beyond lower jaw. Tympanum not visible. The underside feels smooth, looks translucent and has a silvery-white colour. **Forearms**: Hands have small black spots underneath. Fingers with minimal webbing and terminal discs. **Hind legs**: Feet have small black spots underneath. Toes with moderate webbing and terminal discs. **Sexual dimorphism**: Breeding males have yellow throat and prominent white stripe extending from the sides through the eye to the snout.



Call

A harsh *dzeee-dzeee* sound that resembles an insect chirp.

Key ID points

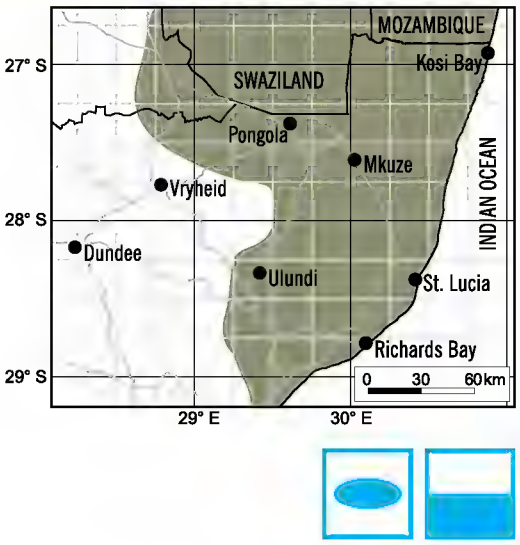
- Eyes: large; pupil horizontal.
- Elongated body and sharply pointed snout.
- Hidden surfaces of the body are translucent with a green or yellow colour.
- Distinctive colours and patterns on the back and underside.

27. Water Lily Frog

Hyperolius pusillus (Cope, 1862) | Umgqagqa Weminduze

Description

Maximum size: 25 mm. **Colour**: Green and transparent skin, which sometimes has small black spots or faint stripes. Vertebral line usually not visible. **Body**: Small and flattened with broad head. Snout is blunt with rounded edges. Tympanum not visible. The underside is transparent and has a green colour. Internal organs are sometimes visible from the underside. **Forearms**: Fingers with terminal discs and minimal webbing. **Hind legs**: Toes with terminal discs and moderate webbing. **Sexual dimorphism**: Breeding males have white gular sac on gular region.



Call

Blurred, high-pitched *chick-chick* clicking sounds.

Key ID points

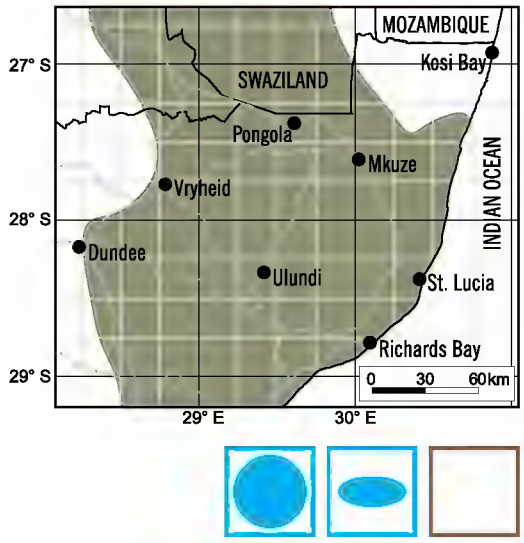
- Eyes: large; pupil horizontal.
- Hidden parts of the body are translucent with a green or yellow colour.
- Bluntly rounded snout.
- Colour and patterns on the back are different to other Reed Frogs, but may be mistaken for Power's Long Reed Frog.

28. Yellow-striped Reed Frog

Hyperolius semidiscus Hewitt, 1927 | Umgqagqa Wemigqa Ephuzi

Description

Maximum size: 35 mm. **Colour**: Green or olive-brown skin. Yellow band extends from the snout, over the eye, to the flanks. This yellow band is surrounded by a thin, dark line. The yellow band sometimes breaks up into spots on the sides of the body. **Body**: Stocky with blunt, rounded snout. Tympanum not visible. The underside feels slightly granular and has an off-white or yellow colour. **Forearms**: Fingers with terminal discs and minimal webbing. **Hind legs**: Small yellow spots are usually visible on the legs. Toes with terminal discs and reduced webbing. **Sexual dimorphism**: Breeding males have dark-yellow, semi-circular gular disc.



Call

A harsh croak followed by a short creaking sound.

Key ID points

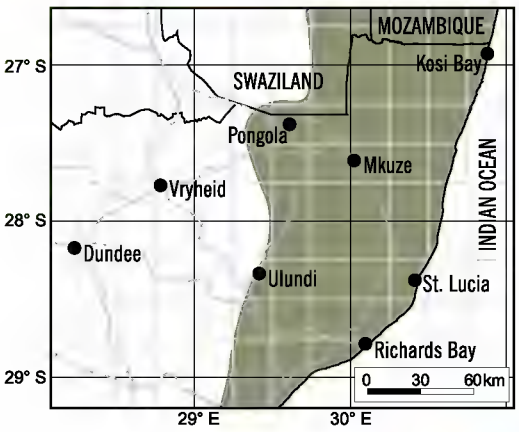
- Eyes: large; pupil horizontal.
- Hidden parts of the body have an orange-red colour.
- Dorsal colour patterns are different to other Reed Frogs.
- Body is not elongated and snout is rounded.

29. Tinker Reed Frog

Hyperolius tuberilinguis Smith, 1849 | Umgqagqa Oluhlaza Okotshani

Description

Maximum size: 36 mm. **Colour**: Lime-green or yellow skin. Pale triangle sometimes visible between the eyes. Juvenile frogs have brown or green colour with markings. **Body**: Stocky with pointed snout. Tympanum not visible. The underside feels granular and has a cream colour. **Forearms**: Fingers with terminal discs and minimal webbing. **Hind legs**: Toes with terminal discs and moderate webbing. **Sexual dimorphism**: Breeding males have a yellow gular sac on gular region.



Call

A series of 2 or 3 tapping sounds with long silence in between.

Key ID points

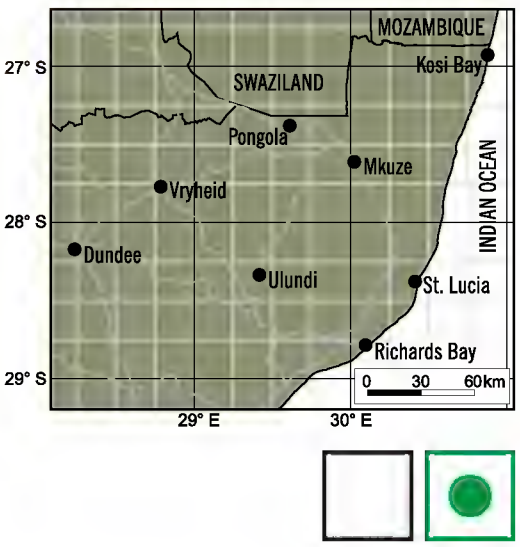
- Eyes: large; pupil horizontal.
- Colour pattern different to other Reed Frogs.
- Hidden parts of the body have yellow to orange colour.
- Body not elongated and snout is pointy.

30. Bubbling Kassina

Kassina senegalensis (Duméril & Bibron, 1841) | UKassina Obhadlayo

Description

Maximum size: 49 mm. **Colour**: Yellowish skin with dark vertebral band. This dark vertebral band has two broken dark bands on each side. Vertebral line not visible. **Body**: Bullet-shaped with short, rounded snout. Tympanum not clearly visible. The skin on the back is smooth. The underside has an off-white colour and feels granular in some parts and smooth in others. **Forearms**: Fingers with slight webbing and no terminal discs. **Hind legs**: Toes with slight webbing and no terminal discs. **Sexual dimorphism**: Males have oval gular disc with dark lateral folds.



Call

A short *boip* sound repeated at long intervals. The sound resembles dripping water.

Key ID points

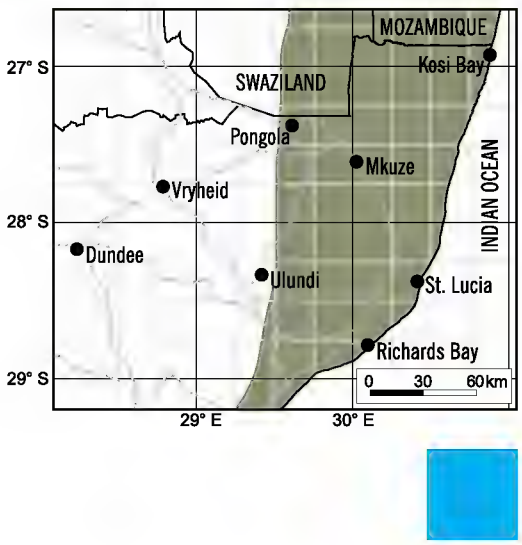
- Eyes: large; pupil vertical.
- Solid vertebral band flanked by two bands.
- Limbs have a whitish colour.
- No terminal discs on limbs.
- Oval gular disc.

31. Red-legged Kassina

Phlyctimantis maculatus (Duméril, 1853) | UKassina Wemilenze Ebomvu

Description

Maximum size: 68 mm. **Colour**: Beige to grey skin with large dark-brown spots surrounded by pale border. Vertebral line not visible. **Body**: Bullet-shaped with short, rounded snout. Tympanum not clearly visible. The skin on the back is smooth to slightly granular. The underside feels granular and has a white colour. **Forearms**: Armpits have a red colouring. Fingers with bulbous terminal discs. **Hind legs**: The bases of the hind legs have a red colouring. Toes with bulbous terminal discs and minimal webbing. **Sexual dimorphism**: Males have grey-brown gular disc and folds of the vocal sac are visible from the sides.



Call

A short and sharp *quack* or *wep* sound.

Key ID points

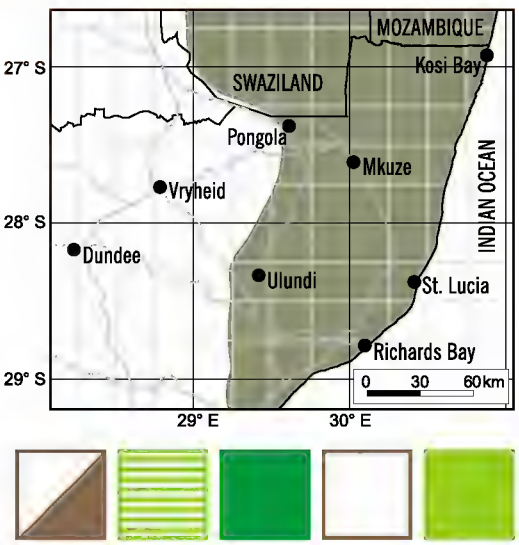
- Eyes: large; pupil vertical.
- Red colour on the armpits and base of hind legs.
- Bulbous terminal discs on limbs.
- Large dark spots on a pale skin.

32. Banded Rubber Frog

Phrynomantis bifasciatus (Smith, 1847) | Isele Elisanjoloba Elinemigqa

Description

Maximum size: 65 mm. **Colour**: Varies from black to dark gold. Two red bands extend from the snout, over the eyes, to the flanks. Another band is located low on the body, above the cloaca. Spots varying from red to white visible on the flanks, near and on the limbs. **Body**: Flat, elongated and pear-shaped with long, slender limbs. Long neck, narrow head and blunt snout. Tympanum small. The skin on the back is smooth and rubbery. The underside feels smooth and rubbery, and has a grey colour with white markings. **Forearms**: Fingers with minimal webbing and small terminal discs. **Hind legs**: Toes with minimal webbing and small terminal discs. **Sexual dimorphism**: Males have darker throats.



Call

A long, high-pitched melodious *pirrrrrrrrr* trill sound.

Key ID points

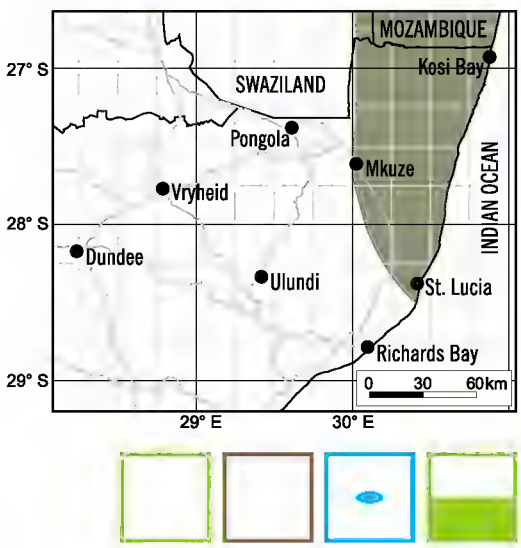
- Eyes: small; pupil circular.
- Grey underside with white spots.
- Minimal webbing on the limbs.
- Two bands extending from the snout to the flanks.

33. East African Puddle Frog

Phrynobatrachus acridoides (Cope, 1867) | Isele Lechibi Lasempumalanga Afrika

Description

Maximum size: 30 mm. **Colour**: Varies from greyish-brown to tan. Light-brown, thin vertebral line or broad vertebral band usually visible. Dark blotches sometimes visible. **Body**: Small and chubby with narrow head and pointed snout. Tympanum visible. A pair of chevron-shaped skin ridges extends from the eyes to the shoulder region. The skin on the back is smooth with a few warts. The underside has grey markings. **Forearm**: Fingers without webbing or terminal discs. **Hind legs**: Toes with variable webbing. Toe tips enlarged to form terminal bulbs. **Sexual dimorphism**: Males have a dark gular pouch. Females have gular pouch with small spots. Males also have small folds on vocal pouch.



Call

A slow continuous but harsh *waak, waak, waak* snoring sound.

Key ID points

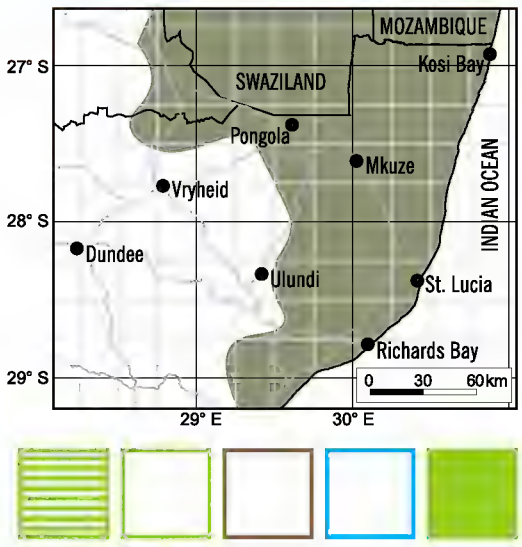
- Eyes: large, pupil horizontal.
- No bands on jaw.
- Terminal bulbs on toe tips.
- Skin on the back is mostly smooth.
- Chevron-shaped skin ridge from eyes to shoulder region.

34. Dwarf Puddle Frog

Phrynobatrachus mababiensis FitzSimmons, 1932 | Isele Lechibi Elifishane

Description

Maximum size: 21 mm. **Colour**: Varies from grey to brown, with dark or light markings. Yellow, green or red vertebral line sometimes visible. Upper and lower jaws have corresponding bands. **Body**: Small and chubby with narrow head and pointed snout. Tympanum usually not visible. The skin on the back has many small wart-like elevations with a pair of noticeably larger elevations near the shoulders. The underside feels smooth and has colour that varies from white on the abdomen to small grey spots on the chest. **Forearms**: Fingers without webbing or terminal discs. **Hind legs**: Toes with minimal webbing and no terminal discs. **Sexual dimorphism**: Males are smaller and their throats are either dark or have small grey spots.



Call

A buzzing sound similar to an insect's call. Most of the time this sound is followed by a click.

Key ID points

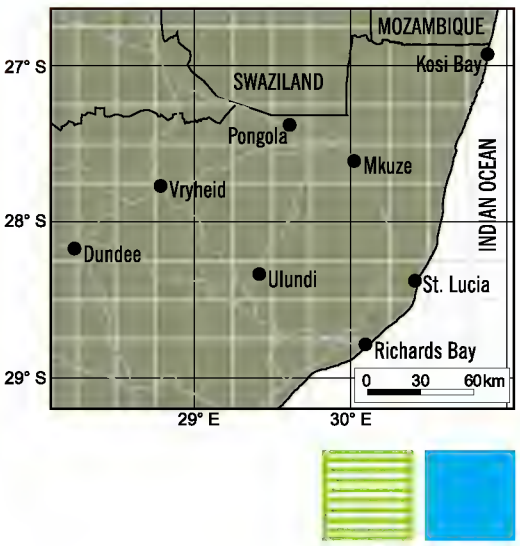
- Eyes: large; pupil horizontal.
- Limbs have no terminal discs.
- Upper and lower jaws have corresponding bands.
- Skin on the back has many small warts and two larger warts near the shoulders.

35. Snoring Puddle Frog

Phrynobatrachus natalensis (Smith, 1849) | Isele Lechibi Elihonayo

Description

Maximum size: 40 mm. **Colour**: Varies from light- to dark-grey or -brown. Tan or light-green vertebral line or broad vertebral band sometimes visible. Dorsal markings vary. **Body**: Small and chubby with narrow head and pointed snout. Tympanum not clearly visible. The skin on the back varies from almost smooth to extremely warty. Two large warts near the shoulders. Small ridge of skin extends from eye to forearm. The underside feels smooth and has a cream colour. **Forearms**: Fingers without webbing or terminal discs. **Hind legs**: Prominent skin fold on tarsus. Toes with moderate webbing and toe tips sometimes expand into terminal bulbs. **Sexual dimorphism**: Males have dark-grey throats and the vocal sac has folds parallel to the jaw line.



Call

A slow *grrr-ooooo grrr-oooo* croaking sound.

Key ID points

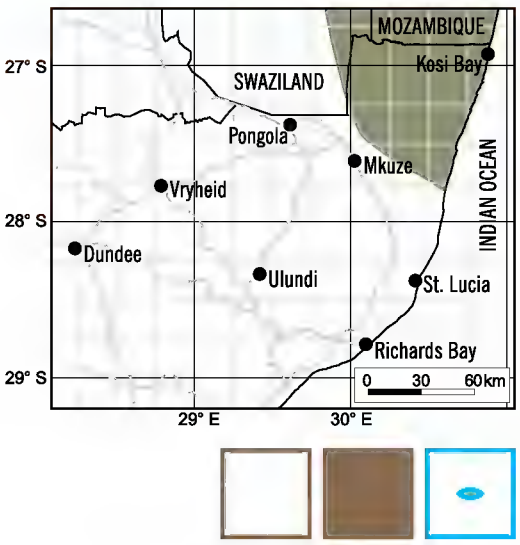
- Eyes: large; pupil horizontal.
- No bands on upper or lower jaw.
- Moderate webbing on toes.
- Smooth to warty skin with two big warts near shoulders.
- Toes sometimes have bulbous tips.

36. Ornate Frog

Hildebrandtia ornata (Peters, 1878) | Ixoxo Elihlotshisiwe

Description

Maximum size: 70 mm. **Colour**: Tan or grey with orange, green and/or golden-brown symmetrical patterns. A brown or green vertebral line is usually visible, dark blotches found along vertebral line. A dark-brown blotch is visible above each eye. Flanks also have dark blotches. **Body**: Robust with short legs and pointed snout. Tympanum visible in adults. The skin on the back is slightly granular and has no warts. The underside feels smooth and has a white colour. A pair of unique Y-shaped markings on either side of the throat. **Forearms**: Fingers without terminal discs. **Hind legs**: Toes with moderate webbing and no terminal discs. **Sexual dimorphism**: Males have two lateral pouches for vocal sacs located directly in front of the forearms (see distended vocal sacs illustrated on page 7).



Call

A long *kwe-kwe* squawking sound.

Key ID points

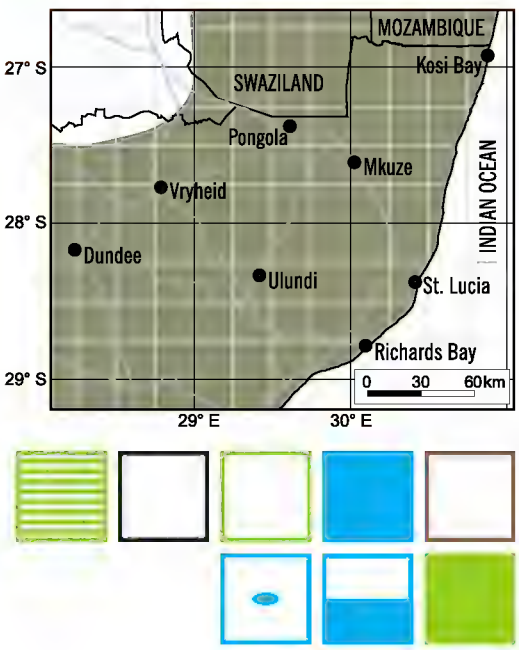
- Eyes: large; pupil horizontal.
- Males have lateral vocal sacs.
- Dark throat with Y-shaped markings.
- Bold symmetrical patterns on the back.

37. Plain Grass Frog

Ptychadena anchietae (Bocage, 1867) | Uvete Olujwayelekile

Description

Maximum size: 62 mm. **Colour**: Varies from light- to dark-grey or light- to reddish-brown. Snout usually paler than rest of body and pale colour forms a triangle. Dark facial mask extends from the snout, past the eye to the forearm. Vertebral line not visible. **Body**: Streamlined with long, powerful hind legs. Head narrow, snout pointed. Tympanum visible. The skin on the back is slightly granular with fine ridges and no warts. The underside feels smooth and mostly has a white colour. **Forearms**: Fingers without terminal discs or webbing. **Hind legs**: Prominent skin fold on tarsus. Toes with extensive webbing and no terminal discs. Dark markings on thighs often fuse to form bands. **Sexual dimorphism**: Males have vocal sacs folding into lateral pouches.



Call

A moderately high-pitched *prrrrrt-prrrrrt* trill sound.

Key ID points

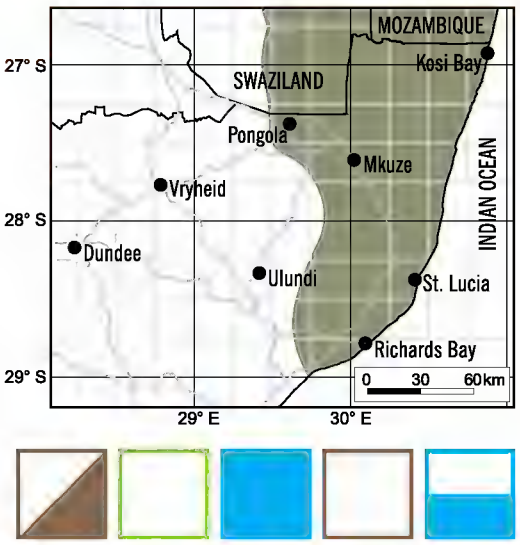
- Eyes: large; pupil horizontal.
- A snout that is paler than the rest of the body.
- Tibia longer than the foot.
- Black markings on the back of the thigh often fuse to form bands.

38. Broad-banded Grass Frog

Ptychadena mossambica (Peters, 1854) | Uvete Olunomugqa Obanzi

Description

Maximum size: 53 mm. **Colour**: Varies from grey to brown with dark blotches. These dark blotches are also found along the vertebral line. **Body**: Streamlined with long, strong hind legs. Head narrow, snout pointed. Tympanum visible. The skin on the back has ridges. Prominent pale-brown ridge extends from eye to groin region. The underside is smooth and white, and sometimes has small grey spots. **Forearms**: Fingers without webbing or terminal discs. **Hind legs**: Toes with moderate webbing and no terminal discs. **Sexual dimorphism**: Males have gular slits that are not parallel to the jaw line.



Call

A series of *kwe-kwe* clucking sounds.

Key ID points

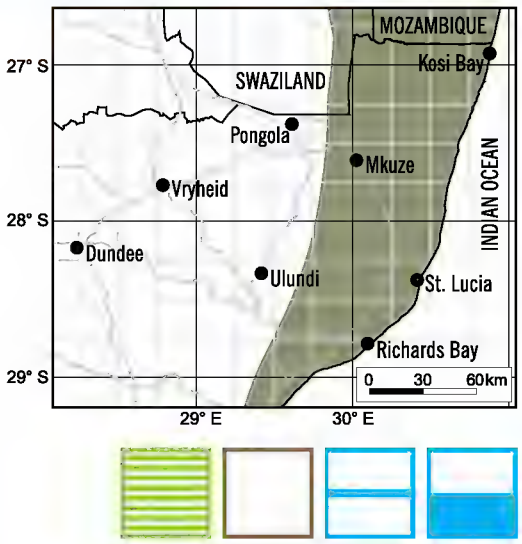
- Eyes: large; pupil horizontal.
- Tibia is longer than foot.
- Tibia sometimes has pale line.
- Snout does not have different colour to the rest of the body.
- Yellow markings on the back of the thighs.
- Outer metatarsal tubercle present.

39. Mascarene Grass Frog

Ptychadena nilotica (Seetzen, 1855) | Uvete LwaseMaskarina

Description

Maximum size: 58 mm. **Colour**: Green or brown skin which usually has green or brown spots. A light-brown or green vertebral line usually visible. **Body**: Streamlined with long, strong hind legs. Head narrow, snout pointed. Tympanum visible. The skin on the back has ridges with a pale-brown-coloured ridge extending from the eye to the groin region. The underside feels smooth and has an off-white to yellowish colour. **Forearms**: Fingers without terminal discs or webbing. **Hind legs**: Prominent skin fold on tarsus. Toes with moderate webbing and no terminal discs. **Sexual dimorphism**: Breeding males have swollen nuptial pads on inner three fingers.



Call

A *wah-wah-wah* quacking sound, followed by clucking sounds.

Key ID points

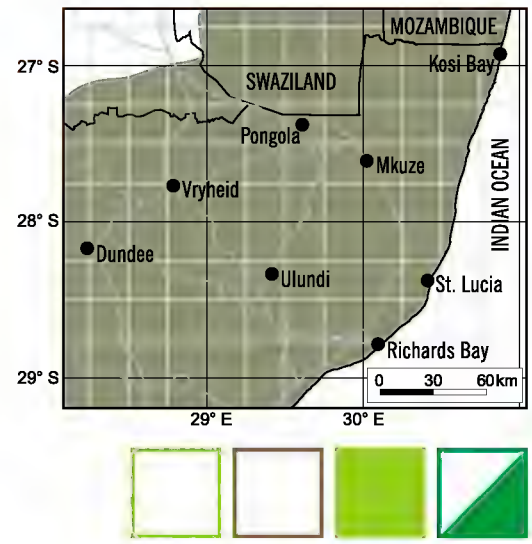
- Eyes: large; pupil horizontal.
- Backs of the thighs have longitudinal black and yellow stripes.
- Tibia has pale line.
- Tibia is shorter than foot.
- Snout has similar colour to the rest of the body.
- No outer metatarsal tubercle.

40. Sharp-nosed Grass Frog

Ptychadena oxyrhynchus (Smith, 1849) | Uvete Olunempumulo Ecijile

Description

Maximum size: 85 mm. **Colour**: Varies from a light brown to a greenish colour with dark blotches smaller than the eye. A pale vertebral line is sometimes present. Snout has triangle that is paler than the rest of the body. **Body**: Larger than most Grass Frogs. Streamlined with long, strong hind legs. Head narrow, snout pointed. Tympanum visible. The skin on the back has ridges. Prominent, cream ridge extends from below eye to forearm. The underside feels smooth and has a white colour with yellow regions. **Forearms**: Fingers without webbing or terminal discs. **Hind legs**: Toes with extensive webbing and no terminal discs. **Sexual dimorphism**: Breeding males have nuptial pads and darker, more prominent gular slits.



Call

A series of moderately high-pitched *prrr-prrr* trill sounds.

Key ID points

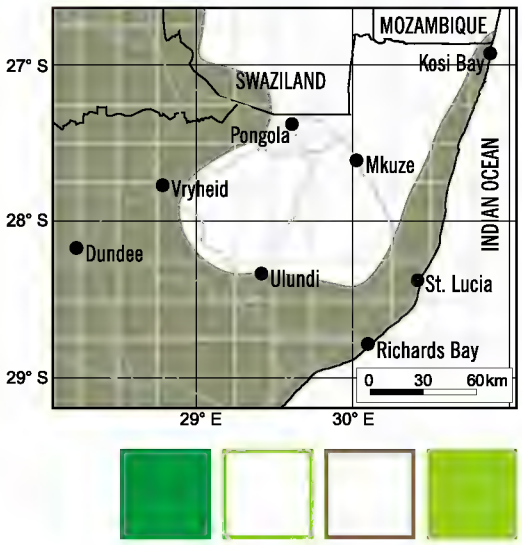
- Eyes: large; pupil horizontal.
- No pale line on tibia.
- Thighs have markings on the back.
- Tibia longer than foot.
- Snout paler than the rest of the body.

41. Striped Grass Frog

Ptychadena porosissima (Steindachner, 1867) | Uvete Olunemigqa

Description

Maximum size: 49 mm. **Colour**: Cream to light brown with brown blotches. A pale-brown vertebral line is visible. Snout has same colour as body. **Body**: Streamlined with long, strong hind legs. Head narrow, snout pointed. Tympanum visible. The skin on the back has ridges. Prominent, pale-brown ridge extends from eye to groin region. The underside feels smooth and has a white colour with yellow regions. **Forearms**: Fingers without webbing or terminal discs. **Hind legs**: Small fold of skin on tarsus. Toes with extensive webbing and no terminal discs. **Sexual dimorphism**: Males have two vocal sacs tucked into lateral pouches on the gular region.



Call

Three or four short *pree-pree* sounds that resemble a bird call.

Key ID points

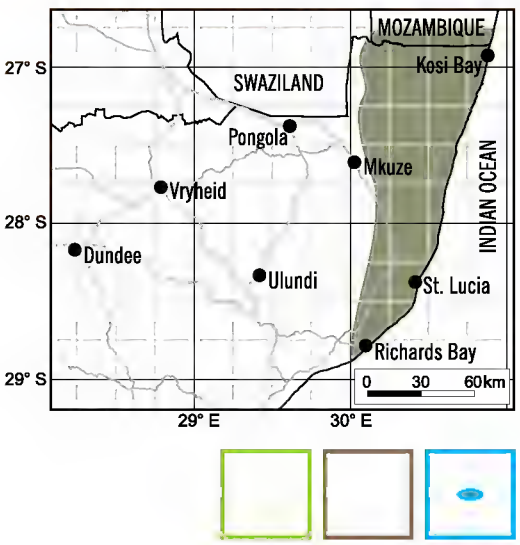
- Eyes: large; pupil horizontal.
- Snout has similar colour to body.
- Tibia has pale line.
- Tibia slightly longer than foot.
- Back of thighs have pale spots and dark markings.

42. Dwarf Grass Frog

Ptychadena taenioscelis Laurent, 1954 | Uvete Olufishane

Description

Maximum size: 40 mm. **Colour**: Brown skin with dark-brown rectangular markings. Pale vertebral line sometimes visible. A dark facial mask extending from the snout, through the eyes is usually present. **Body**: Streamlined with long, strong hind legs. Head narrow, snout pointed. Tympanum visible. The skin on the back has ridges. Prominent, pale-brown or orange ridge extends from eye to groin region. The underside is smooth and has an off-white to yellow colour. **Forearms**: Fingers without webbing or terminal discs. **Hind legs**: Toes with moderate webbing and no terminal discs. **Sexual dimorphism**: Males have black-lined gular sac. Breeding males have nuptial pads on inner three fingers.



Call

One short bleating sound per second.

Key ID points

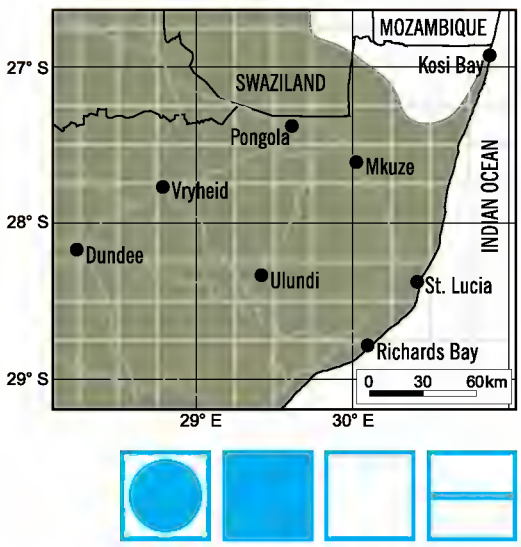
- Eyes: large; pupil horizontal.
- Snout has similar colour to body.
- The back of the thighs is yellow and has three parallel lines.
- Tibia is shorter than foot and has no pale line.

43. Common Platanna

Xenopus laevis (Daudin, 1802) | Idwi Elijwayelekile

Description

Maximum size: 147 mm. **Colour**: Dark-brown or grey skin with dark blotches. Vertebral line not visible. Lateral line bars visible on the flanks. **Body**: Streamlined, slightly flattened and oval-looking body. Snout is rounded and eyes are on top of the head instead of the side. Small tentacles are visible below the eyes. Muscular and powerful hind legs. Tympanum not visible. The skin on the back is smooth and slippery. The underside feels smooth, has an off-white colour, and sometimes has grey markings. **Forearms**: Thin, long fingers without webbing or terminal discs. **Hind legs**: Toes with full webbing and no terminal discs. Inner three toes have claws. **Sexual dimorphism**: Cloacal folds are more swollen in females. During breeding season males have swollen palms on their forearms.



Call

A continuous snoring sound produced underwater.

Key ID points

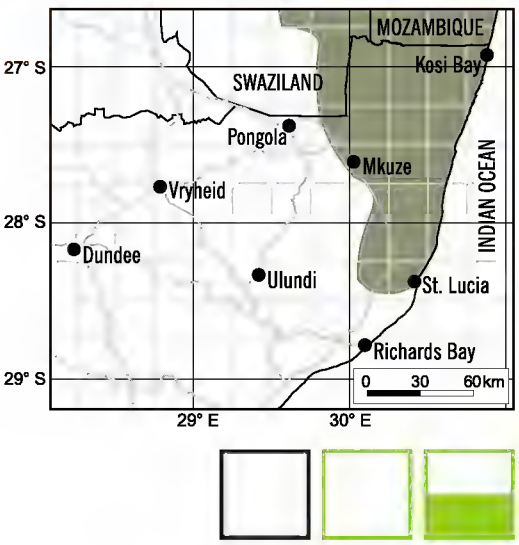
- Eyes: small with no eyelids; pupil circular.
- Sub-ocular tentacle shorter than half diameter of eye.
- Rounded snout and eyes on top of the head.
- Off-white underside, which sometimes has grey markings.
- Lateral line bars, 24 or more, visible on the flanks.

44. Müller's Platanna

Xenopus muelleri (Peters, 1844) | Idwi Lika-Müller

Description

Maximum size: 90 mm. **Colour**: Dark-brown or grey skin with dark blotches. Vertebral line not visible. Lateral line bars visible on the flanks. **Body**: Streamlined, slightly flattened and oval-looking body. Snout rounded and eyes are on top of head instead of the side. Small tentacles visible below the eyes. Muscular and powerful hind legs. Tympanum absent. The skin on the back is smooth and slippery. The underside is smooth with light-grey and orange-yellow regions. **Forearms**: Thin, long fingers without webbing or terminal discs. **Hind legs**: Toes with full webbing and no terminal discs. Inner three toes with claws. **Sexual dimorphism**: Cloacal folds are more swollen in females. During breeding season males have swollen palms on the forearms.



Call

A series of metallic tapping sounds produced underwater.

Key ID points

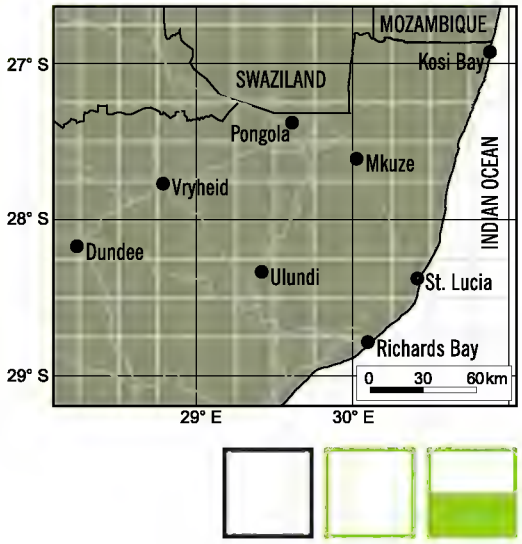
- Eyes: small with no eyelids; pupil circular.
- Sub-ocular tentacle longer than half diameter of eye.
- Rounded snout and eyes on top of the head.
- Lateral line bars, 22–27, visible on each flank.
- Underside has light-grey and orange-yellowish regions.

45. Boettger's Caco

Cacosternum boettgeri (Boulenger, 1882) | Isele Elithambile Elijwayelekile

Description

Maximum size: 23 mm. **Colour**: Colours and patterns are extremely variable and are unreliable characters for identification purposes. Individuals in the same populations may be striped, banded or blotched and may display a range of colours including light and dark shades of green, brown, orange and grey. A dark facial mask extends from the snout, through the eye and tympanum, to the base of the forearm. Pale line on upper lip. **Body**: Small, elongated and slightly flattened body. Head narrow, snout rounded. Tympanum not visible. The skin on the back is smooth to slightly granular. The underside feels smooth and has an off-white colour with grey spots. **Forearms**: Slender fingers without webbing or terminal discs. **Hind legs**: Slender toes without webbing or terminal discs. **Sexual dimorphism**: Males have orange-brown throat and their vocal sac sometimes lacks grey spots.



Call

A series of high-pitched clicking sounds in quick succession.

Key ID points

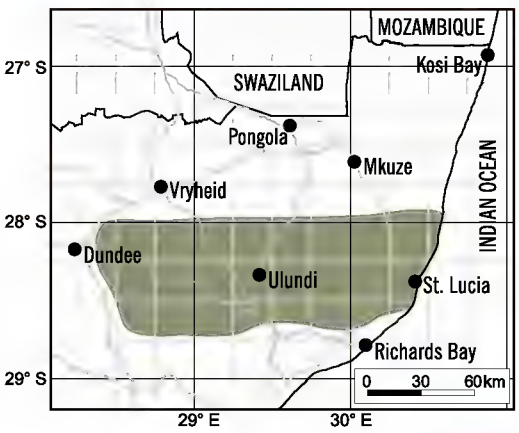
- Eyes: large; pupil horizontal.
- Tympanum not visible.
- Skin on the back smooth to slightly granular.
- Small grey spots on the underside but not the throat.

46. KwaZulu Caco

Cacosternum nanogularum Channing, Schmitz, Burger & Kielgast, 2013 | Isele Elithambile LaKwaZulu

Description

Maximum size: 25 mm, possibly larger. **Colour**: Varies between different shades of brown and dark-green. A dark facial mask extends from the snout, through the eye, to the base of the forearm. Upper lip has white line with black dots. **Body**: Small, elongated and slightly flattened with long, slender legs. Head narrow, snout rounded. Tympanum not visible. The skin on the back is smooth, and has glands and ridges. The underside feels smooth and has minimal pigmentation on the vocal sac. **Forearms**: Fingers without webbing or terminal discs. **Hind legs**: Toes with minimal webbing and no terminal discs. **Sexual dimorphism**: Males have nuptial pads and darker throats.



Call

A series of pulsed chirping sounds.

Key ID points

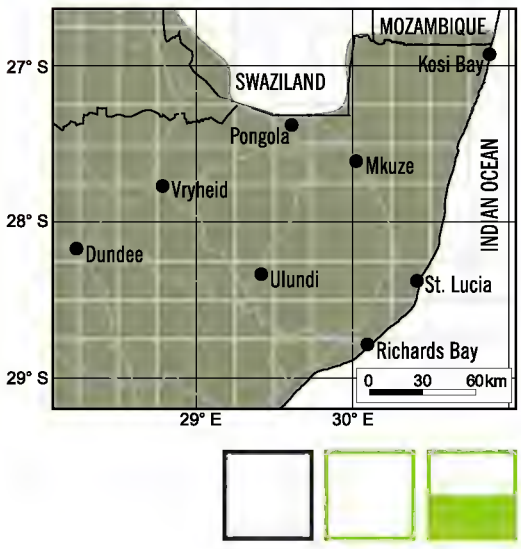
- Eyes: large; pupil horizontal.
- Well-developed subarticular tubercles on hands.
- Outer metatarsal tubercle present as a pale spot.

47. Bronze Caco

Cacosternum nanum Boulenger, 1887 | Isele Elithambile Elisathusi

Description

Maximum size: 23 mm. **Colour**: Skin is grey or brown with sections that usually look rusted or bronzed. Warts have spots that are darker than the skin. Pale vertebral line sometimes visible. A dark facial mask extends from the snout, through the eye and tympanum, to the base of the forearm. **Body**: Small with pointed snout. Tympanum sometimes visible. The skin on the back is granular. The underside is smooth and has a white colour with dense spots varying from grey to black. **Forearms**: Slender fingers without webbing or terminal discs. **Hind legs**: Slender toes without terminal discs. Minimal webbing sometimes visible between the toes. **Sexual dimorphism**: Males have throats covered with dark spots.



Call

A metallic sounding *che-che-che* noise followed by clicks repeated in quick succession.

Key ID points

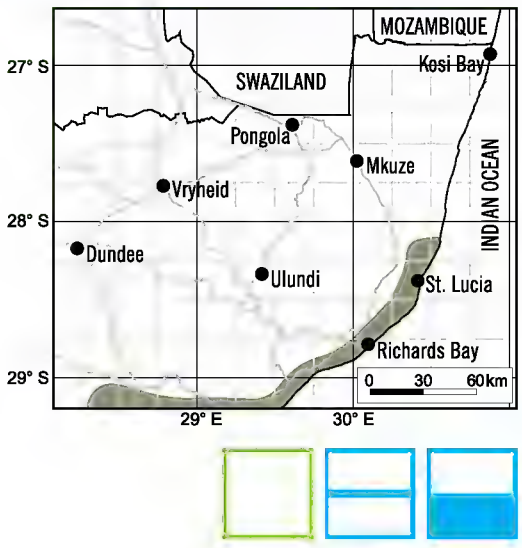
- Eyes: large; pupil horizontal.
- Tympanum sometimes visible.
- Skin on the back is granular.
- The underside is white and has dense dark, spots.
- The outer metatarsal tubercle is small to well developed.

48. Striped Caco

Cacosternum striatum FitzSimons, 1947 | Isele Elithambile Elinemigqa

Description

Maximum size: 21 mm. **Colour**: Varies between different shades of brown and green. Vertebral line sometimes visible. Dark markings next to the vertebral line. Two dark stripes extend from behind the eyes to groin region. A dark facial mask extends from the snout, through the eye, to the base of the forearm. **Body**: Small and elongated body with small, narrow head. Tympanum not visible. The skin on the back is slightly smooth to granular and has ridges. The underside feels smooth and has a white colour, which sometimes has grey blotches. **Forearms**: Slender fingers without webbing or terminal discs. **Hind legs**: Thighs have pale line on the back. Slender toes without webbing or terminal discs. **Sexual dimorphism**: Males have darker throats.



Call

A long creaking sound with three chirps in between that resembles a cricket's call.

Key ID points

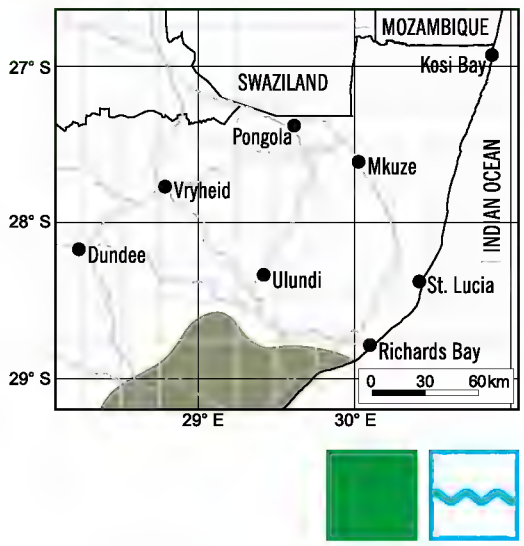
- Eyes: large; pupil horizontal.
- Two dark stripes extend from behind the eyes to groin region.
- Small subarticular tubercles on hands.
- Outer metatarsal tubercle is not visible.
- The backs of the thighs have a pale line.

49. Kloof Frog

Natalobatrachus bonebergi Hewitt & Methuen, 1912 | Isele Lase-Kloof

Description

Maximum size: 37 mm. **Colour**: Varies between brown and grey with a few pale spots on the back. Vertebral line often visible on a broader vertebral band. Snout with pale triangle on top. A dark facial mask extends from the snout, through the eye and tympanum, to the base of the forearm. White band on upper jaw. **Body**: Long and slender with slender limbs. Pointed snout hangs over the mouth. Tympanum sometimes obscured by colour. The skin on the back has elevated ridges. The underside has an off-white colour with small spots. **Forearms**: Long slender fingers with large, T-shaped terminal discs and no webbing. **Hind legs**: Slender toes with smaller terminal discs and minimal webbing. **Sexual dimorphism**: Males have nuptial pads on their fingers.



Call

A randomly emitted click sound.

Key ID points

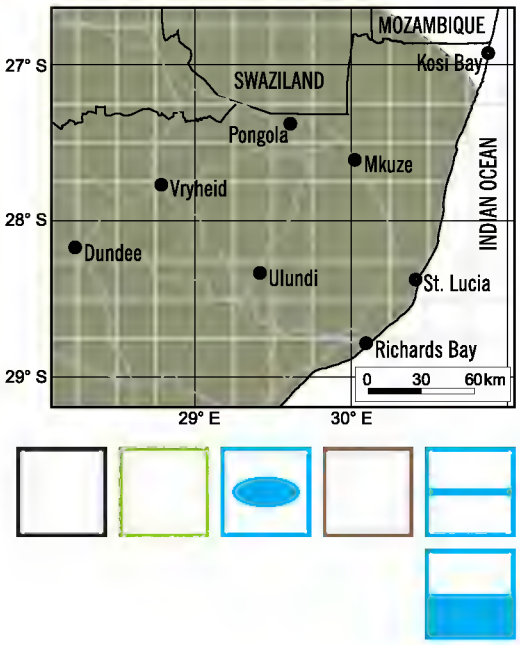
- Eyes: large; pupil horizontal.
- Fingers with T-shaped terminal discs and no webbing.
- Pointed snout with triangle on top.
- Snout overhangs mouth.

50. Common River Frog

Amietia delalandii (Duméril & Bibron, 1841) | Isele Lasemfuleni Elijwayelekile

Description

Maximum size: 90 mm. **Colour**: Skin colour varies from light- to dark-brown, and light- to dark-green. Dark-brown blotches are scattered all over the body. A pale-brown or bright-green vertebral line is visible on most frogs. Flanks have grey markings. **Body**: Streamlined with long back legs, narrow head and pointed snout. Tympanum visible. The skin on the back is smooth and has ridges. The underside is smooth and has a white colour, which sometimes has grey or black markings. **Forearms**: Fingers without terminal discs or webbing. **Hind legs**: Legs are muscular. Toes with extensive webbing and no terminal discs. **Sexual dimorphism**: Males have darker throats and nuptial pads on their thumbs.



Call

A series of *kik-kik-kik-kik-kik* clicking sounds that resemble a rattle, followed by *keroip* croak.

Key ID points

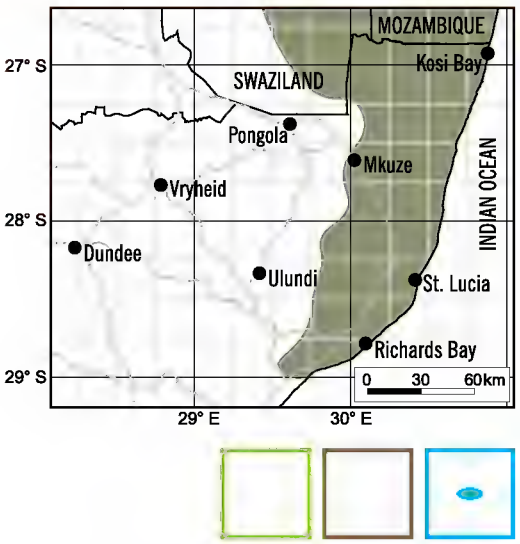
- Eyes: large; pupil horizontal.
- Narrow head with eyes that protrude when viewed from the top.
- Tympanum is more than half the diameter of the eye.
- Webbing is absent on two phalanges of the longest toe.

51. African Bullfrog

Pyxicephalus edulis Peters, 1854 | Inkunzi Yexoxo

Description

Maximum size: 120 mm. **Colour**: Light-brown skin with grey or brown patches. Juveniles bright green. Pale vertebral line often visible. Pale, vertical bars on upper lip. **Body**: Large and robust with broad head and slightly pointed snout. Tympanum visible with white spot. The skin on the back has elevated ridges. The underside feels smooth and has a white to yellowish colour. The throat sometimes has markings. **Forearms**: Fingers without webbing or terminal discs. **Hind legs**: Toes with fleshy webbing and no terminal discs. **Sexual dimorphism**: Males larger than females. Breeding males often bright green in colour.



Call

A short *whap-whap* sound resembling a yapping dog.

Key ID points

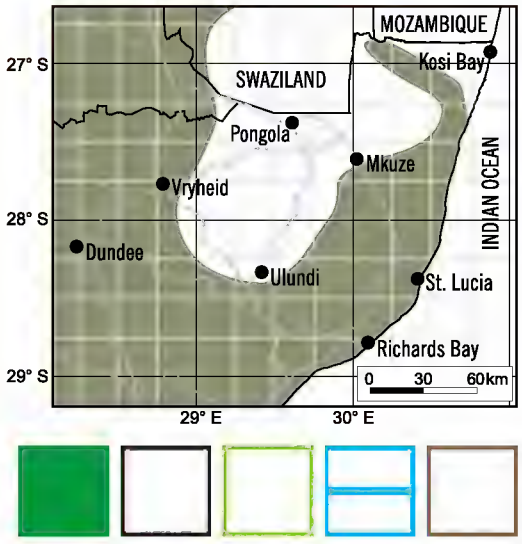
- Eyes: large; pupil horizontal.
- Tympanum has white spot.
- Upper jaw has vertical pale bars.
- Two bony projections on the lower jaw and a row of tooth-like structures on the upper jaw.
- Large, curved inner metatarsal tubercle.

52. Striped Stream Frog

Strongylopus fasciatus (Smith, 1849) | Isele Lasemfuleni Elinemidwa

Description

Maximum size: 50 mm. **Colour**: Pale-brown or yellowish skin. Two dark bands extend from behind the eyes to the vent. Two or three shorter dark bands on the flanks. Silver to golden-brown vertebral band always visible. A dark facial mask extends from the snout, through the eye and tympanum, to the forearm. A white line extends from below the nostril, under the eye and tympanum, to the base of the forearm. **Body**: Streamlined and slender with long hind legs and pointed snout. Tympanum visible. The skin on the back is smooth with slight elevations on the dark bands. The underside feels smooth and has an off-white to yellow colour. **Forearms**: Long, slender fingers without webbing or terminal discs. **Hind legs**: Long, slender toes with reduced webbing and no terminal discs. Fourth toe reaches past forearm when frog is sitting. **Sexual dimorphism**: Lateral margin of the jaw darker in males.



Call

A sharp high-pitched *ik-ik-ik* sound followed by series of *ti-ti-ti* clicks in quick succession.

Key ID points

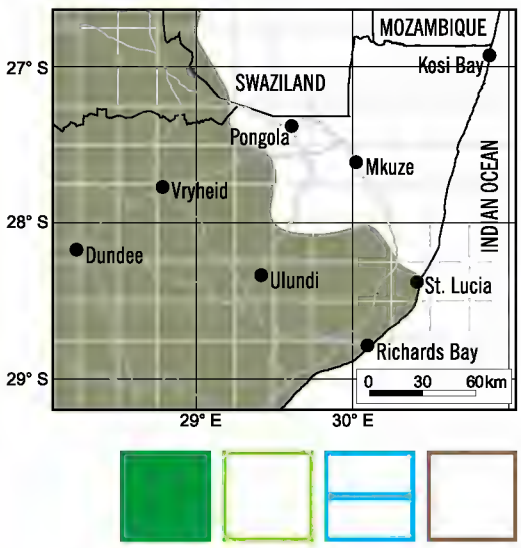
- Eyes: large; pupil horizontal.
- Distinct patterns on the back.
- Sharply pointed snout.
- Long fourth toe.
- Reduced webbing on three to four phalanges of the longest toe.

53. Clicking Stream Frog

Strongylopus grayii (Smith, 1849) | Isele Lasemfuleni Eligqafayazo

Description

Maximum size: 50 mm. **Colour**: Varies from light- to dark-brown with dark markings scattered on the body. Thin, pale vertebral line or broad, pale to reddish-brown vertebral band is sometimes visible. A dark facial mask extends from the snout, through the eye and tympanum, to the forearm. A white line extends from below the nostril, under the eye and tympanum, to the base of the forearm. **Body**: Streamlined and slender with long hind legs and pointed snout. Tympanum visible. The skin on the back is slightly granular and has elevated ridges. The underside feels smooth and has an off-white colour. **Forearms**: Long, slender fingers without webbing or terminal discs. **Hind legs**: Long, slender toes with minimal webbing and no terminal discs. Fourth finger reaches forearm when in sitting position, but does not pass it. **Sexual dimorphism**: Males have gold pigmentation on the lower jaw.



Call

A short and hollow tapping sound.

Key ID points

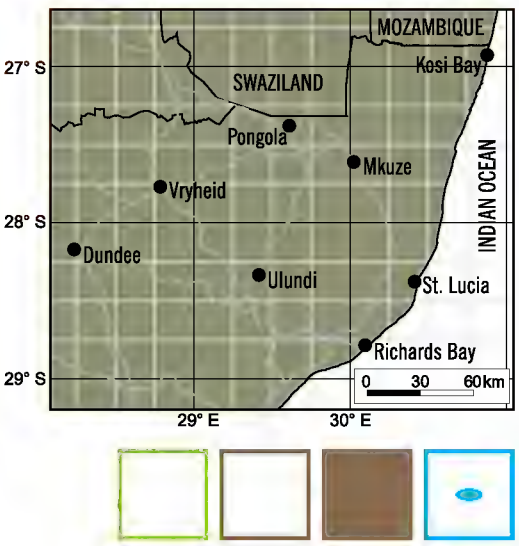
- Eyes: large; pupil horizontal.
- Four phalanges of the longest toe have no webbing.
- Snout not sharply pointed.
- Dark spots on the back are common regardless of variable skin colour.

54. Tremolo Sand Frog

Tomopterna cryptotis (Boulenger, 1907) | Isele Lasesihlabathini Elinemigqa

Description

Maximum size: 51 mm. **Colour**: Varies between brown and green with dark markings. Pale vertebral line often present along with pale line extending from behind eye to groin region. Pale, granular skin ridge under tympanum. **Body**: Appearance resembles a toad; stout with broad head and rounded snout. Tympanum partially obscured. The skin on the back has warts that mostly have pale tips. The underside feels smooth and has a white colour. **Forearms**: Fingers without webbing or terminal discs. **Hind legs**: Toes with reduced webbing and no terminal discs. **Sexual dimorphism**: Males have dark pigmentation along the jaw.



Call

A series of high-pitched metallic *ki-ki-ki-ki* sounds repeated in quick succession.

Key ID points

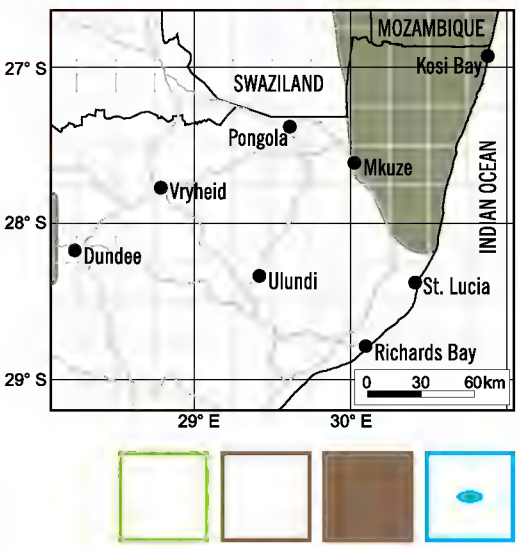
- Eyes: large; pupil horizontal.
- Skin on the back has warts.
- First finger has single subarticular tubercle.
- Pale patch between the forearms, on the vertebral line.
- Glandular skin ridge below the tympanum is not continuous from the eye to the forearm.
- Prominent, curved metatarsal tubercle used for digging.

55. Knocking Sand Frog

Tomopterna krugerensis Passmore & Carruthers, 1975 |
Isele Lasesihlabathini Elingqongqozayo

Description

Maximum size: 52 mm. **Colour**: Varies between cream and light brown with brown blotches that have dark edges. Pale vertebral line usually not visible. Pale, granular skin ridge under tympanum. **Body**: Appearance resembles a toad; stout with broad head and rounded snout. Tympanum not visible. The skin on the back has warts that mostly have pale or brown tips. The underside feels smooth. **Forearms**: Fingers without webbing or terminal discs. **Hind legs**: Toes with reduced webbing and no terminal discs. **Sexual dimorphism**: Males have dark pigmentation along the jaw.



Call

A series of *ta-ta-ta-ta* sounds that resemble knocking on wood.

Key ID points

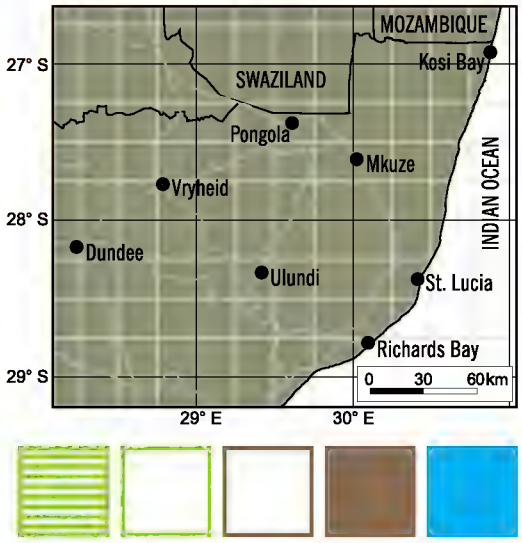
- Eyes: large; pupil horizontal.
- Skin on the back has warts.
- First finger has double subarticular tubercle.
- Glandular skin ridge under tympanum is not continuous from the eye to forearm.
- Prominent, curved metatarsal tubercle.

56. Natal Sand Frog

Tomopterna natalensis (Smith, 1849) | Isele Lasesihlabathini LaseNatali

Description

Maximum size: 44 mm. **Colour**: Great variation in skin colour including beige and a reddish-brown. Grey or brown blotches often present. Pale vertebral line sometimes visible. **Body**: Appearance resembles a toad; stout with broad head. Snout more pointed than other Sand Frogs. Tympanum sometimes not visible. The skin on the back is smooth to slightly granular. The underside feels smooth and has a white colour. **Forearms**: Fingers without webbing or terminal discs. **Hind legs**: Toes with reduced webbing and no terminal discs. **Sexual dimorphism**: Males have darker throats.



Call

A series of sharp, high-pitched *tut-tut-tut-tut* sounds.

Key ID points

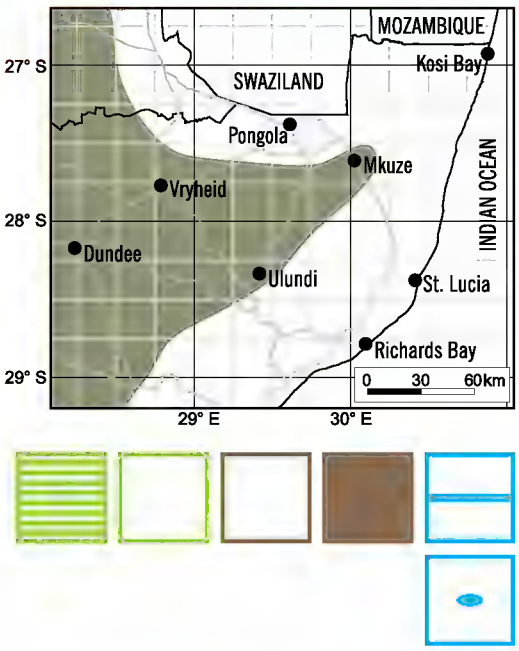
- Eyes: large; pupil horizontal.
- Skin on the back is smooth to slightly granular.
- First finger has single subarticular tubercle.
- Glandular skin ridge from the eye to the forearm is not continuous.
- Prominent, curved metatarsal tubercle used for digging.

57. Tandy's Sand Frog

Tomopterna tandyi Channing & Bogart, 1996 | Isele Lasesihlabathini LikaTandy

Description

Maximum size: 54 mm. **Colour**: Varies from grey to brown. Pale vertebral line often visible along with pale line extending from behind the eye to the groin area**.** Pale, granular skin ridge found under the tympanum. **Body**: Appearance resembles a toad; stout with broad head and rounded snout. Tympanum partially obscured. The skin on the back has warts that mostly have brown tips. The underside feels smooth and has a white colour. **Forearms**: Fingers without webbing or terminal discs. **Hind legs**: Toes with reduced webbing and no terminal discs. **Sexual dimorphism**: Males have dark pigmentation along the jaw.



Call

A series of high-pitched metallic *ki-ki-ki-ki* sounds repeated in quick succession.

Key ID points

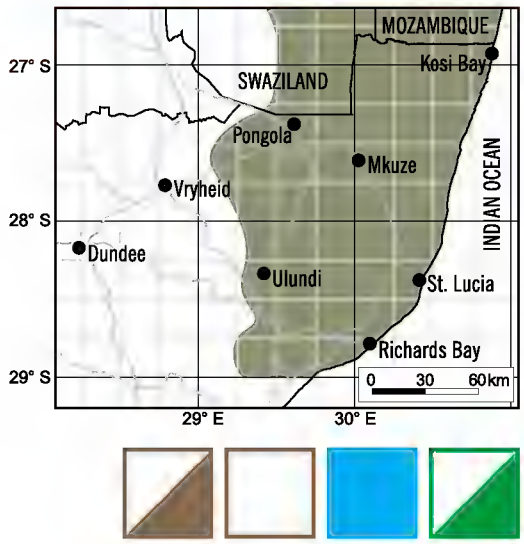
- Eyes: large; pupil horizontal.
- Similar in appearance to Tremolo Sand Frog.
- Skin on the back has warts.
- First finger has single subarticular tubercle.
- Pale patch between forearms, on the vertebral line.
- Glandular skin ridge below the tympanum is not continuous from the eye to the forearm.
- Prominent, curved metatarsal tubercle.

58. Southern Foam Nest Frog

Chiromantis xerampelina Peters, 1854 | Usomagwebu Waseningizimu

Description

Maximum size: 85 mm. **Colour**: Varies between dark-grey, brown and an off-white colour. Dark markings scattered all over the body. **Body**: Long and slender with hump on the back and a rounded snout. Tympanum visible. Granular skin ridge extends from behind the eye to the tympanum. The skin on the back is soft and granular with a few warts. The underside feels granular and has white and pinkish regions. **Forearms**: Long, slender fingers with terminal discs and moderate webbing. **Hind legs**: Long, slender toes with terminal discs and extensive webbing. **Sexual dimorphism**: Females are much larger. Males have off-white coloured nuptial pads.



Call

A series of low croaking sounds.

Key ID points

- Eyes: large; pupil horizontal.
- Fingers arranged in opposing pairs.
- Fingers and toes with terminal discs.
- Extensive webbing on toes.
- Thin granular skin ridge extends from behind eye to base of forearm.

GLOSSARY

Advertisement call: A sound produced by male frogs to attract females for mating purposes.

Amplexus: A frog mating embrace or hug. During mating the male holds on to the body of the female with the forearms and in some species by adhesion.

Camouflage: To hide or disguise something using colour or covering so that it appears to be part of its surroundings.

Diaphragm: Muscular tissue that separates the thorax and abdomen of mammals and is mainly used for breathing. It is absent in frogs.

Dorsal: Relating to the upper side or the back.

Endemic: Refers to something that is only found in a specific geographic location.

Gular: Refers to the upper part of the throat.

Gular disc: Thickened area of skin found below a male frog's throat. This serves to protect the vocal sac when the frog calls.

Gular slit: A pair of slits found on the sides of the gular disc. The vocal sac appears from these slits when the frog calls.

Inner metatarsal tubercle: Tubercle found at the base of the first toe.

Metamorphosis: A change from an immature form to an adult form.

Metatarsal: Refers to an area of the foot between the ankle and the toes.

Morphology: The form and structure of an organism or one of the organism's parts.

Nagana: A disease that commonly affects wildlife and is caused by parasites that are transmitted by tsetse flies. It causes fever and weakness, and eventually results in death of livestock if untreated.

Nocturnal: Done or active during the night.

Nuptial pad: A rough bump of skin on the thumb, fingers or forearms of male frogs. This bump swells in the mating season and helps male frogs get a better grip during amplexus.

Osmoregulation: A physiological process used by organisms to maintain water balance.

Outer metatarsal tubercle: Tubercle found at the base of the fifth toe.

Parotoid gland: Bumps or swollen areas that produce secretions and are located on the side of the head, behind the eyes.

Pathogen: A microorganism that causes disease.

Permeable: To allow liquids or gases to pass through.

Phalanges (singular form – phalanx): Bones that make up fingers or toes.

Predator: An animal that hunts and kills other animals for food.

Prey: An animal that is killed by others for food.

Sexual dimorphism: Distinct differences between males and females of the same species.

Sleeping sickness: When nagana (see definition above) affects people it is then known as Human Sleeping Sickness.

Species: A group of organisms that are able to interbreed successfully with each other, but cannot successfully breed with other groups. Viable hybrids may form, but in animals these are usually sterile.

Sp.: Singular abbreviation for species, see species. (Usually used when the genus to which an individual belong is known, but not the species.)

Spp.: Plural abbreviation for species, see species. (Usually used when referring to more than one species belonging to the same genus.)

Subarticular: Refers to below the joint or articulation.

Tarsus: The part of the foot between the base of the toes and the heel.

Tibia: The middle part of the hind leg, between the thigh and the tarsus.

Tubercle: A small, rounded projection.

Tympanum: A structure used for hearing both on land and underwater. This structure is visible as circular patch of skin directly behind the eyes of many frogs.

Vector: Refers to an organism that transfers a parasite or disease from one animal to another. Vectors are usually insects that bite.

Vent (also known as a cloaca): An opening at the bottom end of a frog that is used for both reproduction and excretion.

Virus: An infective agent that is only able to multiply within the living cells of a host.

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About the authors

Fortunate M. Phaka is a young conservationist and one of the *Mail & Guardian* Top 200 Young South Africans for 2016. His main interest lies in how conservation can be made relatable to non-scientists and this book is one of the ways of achieving that goal. For the Zululand region, and KwaZulu-Natal at large, this book is a contribution to the development of a local language and a way to increase understanding about the province's wealth of biodiversity. This field guide forms a social element of Fortunate's Master's research on frogs in Ndumo Game Reserve.

Edward C. Netherlands is a dual PhD candidate between the North-West University, South Africa and KU Leuven, Belgium. His PhD forms part of the VLIROUS programme for the *Development of tools for sustainable utilization and management of aquatic resources in South Africa*. His research interests include the molecular biology, ecology and taxonomy of herpetofauna and their associated parasites. Edward is passionate about teaching the importance of conservation to young minds and non-scientists.

Donnavan Kruger is a lecturer at the North-West University. He obtained his PhD in Zoology with a focus on amphibian ecology and acoustics. He has published literature on a wide variety of topics concerning frogs, including attitudes of people towards frogs to assess perceptions, beliefs and superstitions associated with frogs in South Africa.

Louis du Preez heads the African Amphibian Conservation Research Group at the North-West University in Potchefstroom. In his research he focusses on amphibian conservation, diseases and parasites and publishes frequently on these topics. He holds an honorary appointment with the South African Institute for Aquatic Biodiversity, Somerset Street, Grahamstown 6139.

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